CALIFORNIA DESERT CONSERVATION AREA PLAN AMENDMENT / FINAL ENVIRONMENTAL IMPACT STATEMENT

FOR

IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

FEIS-10-31

JULY 2010

BLM

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Needles Field Office
1303 South U.S. Highway 95
Needles, CA 92363
www.ca.blm.gov/needles

In Reply Refer To:

In reply refer to:
1610-5.G.1.4
2800lCACA-48668

Dear Reader:

Enclosed is the proposed California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement (CDCA Plan Amendment/FEIS) for the Ivanpah Solar Electric Generating System (ISEGS) project. The Bureau of Land Management (BLM) prepared the CDCA Plan Amendment/FEIS for the ISEGS project in consultation with cooperating agencies and California State agencies, taking into account public comments received during the National Environmental Policy Act (NEPA) process. The proposed plan amendment adds the Ivanpah Solar Electric Generating System project site to those identified in the current California Desert Conservation Area Plan, as amended, for solar energy production. The decision on the ISEGS project will be to approve, approve with modification, or deny issuance of the rights-of-way grants applied for by Solar Partners I, 11, IV, and VIII.

This CDCA Plan Amendment/FEIS for the ISEGS project has been developed in accordance with NEPA and the Federal Land Policy and Management Act of 1976. The CDCA Plan Amendment is based on the Mitigated Ivanpah 3 Alternative which was identified as the Agency Preferred Alternative in the Supplemental Draft Environmental Impact Statement for ISEGS, which was released on April 16,2010. The CDCA Plan Amendment/FEIS contains the proposed plan amendment, a summary of changes made between the DEIS, SDEIS and FEIS for ISEGS, an analysis of the impacts of the proposed decisions, and a summary of the written and oral comments received during the public review periods for the DEIS and for the SDEIS, and responses to comments.

The BLM will be accepting additional public comment on the CDCA Plan Amendment/FEIS within 30 days after the Environmental Protection Agency publishes the Notice of Availability in the Federal Register. Comments can be sent to: George Meckfessel, Planning and Environmental Coordinator, Needles Field Office, 1303 South Highway 95, Needles, CA 92363, or email caisegs @ blm.gov.

Pursuant to the BLM's planning regulations at 43 CFR 1610.5-2, any person who participated in the planning process for the CDCA Plan Amendment and has an interest that is or may be adversely affected by the proposed plan amendment may protest approval of the plan amendment within 30 days from the date the Environmental Protection Agency (EPA) publishes the Notice of Availability in the Federal Register. For further information on filing a protest, please see the accompanying protest regulations in the page that follows (labeled as Attachment 1). The regulations specify the required elements in a protest. Protesting parties should take care to

document all relevant facts and, as much as possible, reference or cite the planning documents or available planning records (e.g., meeting minutes or summaries, correspondence, etc.).
All protests must be in writing and mailed to the following address:

Regular Mail:
Director (210)
Attention: Brenda Williams
P.O. Box 66538
Washington, D.C. 20035

Overnight Mail:
Director (210)
Attention: Brenda Williams
1620 L Street, N.W., Suite 1075
Washington, D.C. 20036

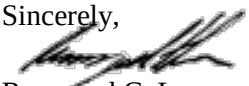
Before including your address, phone number, e-mail address, or other personal identifying information in your protest, be advised that your entire protest - including your personal identifying information - may be made publicly available at any time. While you can ask us in your protest to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

All protests must be received by the Director by the close of the protest period to be accepted as valid. Protests that are postmarked by the close of the protest period but received by the Director after the close of the protest period will only be accepted as valid if the protesting party also provides a faxed or e-mailed advance copy before the close of the protest period. To provide the BLM with such advance notification, please fax protests to the attention of Brenda Hudgens-Williams- BLM protest coordinator at 202-912-7129, or e-mail protests to: Brenda-Hudgens-Williams @ blm.gov.

The BLM Director will make every attempt to promptly render a decision on each valid protest. The decision will be in writing and will be sent to the protesting party by certified mail, return receipt requested. The decision of the BLM Director shall be the final decision of the Department of the Interior. Responses to protest issues will be compiled in a Director's Protest Resolution Report that will be made available to the public following issuance of the decisions.

Upon resolution of all land use plan protests, the BLM will issue a Record of Decision (ROD) adopting the Approved CDCA Plan Amendment and making a decision regarding issuance of the right-of-way grant. Copies of the ROD will be mailed or made available electronically to all who participated in this NEPA process and will be available to all parties through the Needles Field Office website (http://www. blm.gov/ca/st/en/fo/needles/nefo-nepa. html), or by mail upon request.

Sincerely,



Raymond C. Lee
Field Manager, Needles

Attachment 1

1.0 Executive Summary

1.1 Introduction

The proposed action evaluated within this Environmental Impact Statement (EIS) is the construction and operation of the Ivanpah Solar Electric Generating System (ISEGS) project, a proposed solar-thermal electricity generation facility located on public lands managed by the Bureau of Land Management (BLM) in San Bernardino County, California. The EIS represents the environmental review document developed by the BLM to evaluate potential impacts associated with the proposed action. The EIS also functions as the environmental evaluation of a proposed amendment to BLM's California Desert Conservation Area (CDCA) Plan, which would identify the ISEGS site within the Plan.

Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC; and Solar Partners VIII, LLC, which are subsidiaries of BrightSource Energy, Inc. (applicant or BrightSource Energy), filed an Application for Certification (AFC) (07-AFC-5) for the proposed ISEGS. The proposed ISEGS project and related facilities are under the Energy Commission's jurisdiction and require certification by the California Energy Commission to operate the facility. As the proposed project would be located on public land, BrightSource Energy has also filed an application to BLM for a land use Right-of-Way pursuant to the Federal Land Policy and Management Act (FLPMA). Under FLPMA Title V (Rights-of-Way), the Secretary of Interior is authorized to grant rights-of-way for the purpose of allowing systems for generation, transmission, and distribution of electric energy. BrightSource Energy has also applied to the U.S. Department of Energy (DOE) for a loan guarantee pursuant to Title XVII of the Energy Policy Act. The project would be developed in three phases, known as Ivanpah 1, 2, and 3. The application for a loan guarantee for Ivanpah 1 was made in November 2008, and the application for Ivanpah 2 and 3 was made in February 2009. BrightSource Energy has also applied to the U.S. Treasury Department for Payments for Specified Energy Property in Lieu of Tax Credits under §1603 of the American Recovery and Reinvestment Act of 2009 (Public Law 111-5). This program offers a grant (in lieu of investment tax credit) to receive funding for 30% of the total capital cost at such time as a project achieves commercial operation (currently applies to projects that begin construction by December 31, 2010 and begin commercial operation before January 1, 2017). Pursuant to Treasury Department guidance ("Payments for Specified Energy Property in Lieu of Tax Credits under the American Recovery and Reinvestment Act of 2009", U.S. Treasury Department Office of the Fiscal Assistant Secretary, July 2009/ Revised March 2010) a Section 1603 payment with respect to specified energy property does not make the property subject to the requirements of National Environmental Policy Act (NEPA) and similar laws.

This EIS examines the environmental and public health and safety aspects of the proposed project, based on the information provided by the applicant, that received through public comment, and that received from other sources available at the time the EIS was prepared. The EIS contains analyses required as part of an EIS prepared under the NEPA.

BLM is the lead agency for the NEPA review of the proposed Right-of-Way and associated CDCA Plan Amendment. In August, 2007, the California Energy Commission (Energy Commission) and BLM California State Office entered into a Memorandum of Understanding (MOU) to jointly develop the environmental analysis documentation for solar thermal projects which are under the jurisdiction of both agencies. The purpose of the MOU is to avoid duplication of the agency efforts, share the agency's expertise and information, promote intergovernmental coordination, and facilitate public review. On November 4, 2009, the BLM and California Energy Commission (Energy Commission) staff jointly prepared the Final Staff Assessment (FSA)/Draft Environmental Impact Statement (DEIS) and Draft CDCA Plan Amendment for the ISEGS project. The Notice of Availability of the DEIS was published on November 10, 2009; the 90-day public review and comment period ended on February 11, 2010.

After publication of the DEIS, additional information regarding two of the alternatives identified and evaluated in the DEIS (the Reduced Acreage Alternative and the I-15 Alternative) was obtained by BLM through the Energy Commission public hearing and BLM public comment processes. Based on the receipt of these additional data, BLM concluded that the rationale for eliminating the Reduced Acreage and I-15 Alternatives in the DEIS was insufficient, and that these two alternatives merited more detailed evaluation in a Supplemental DEIS (SDEIS). The Notice of the Availability of the SDEIS was published on April 16, 2010; the 45-day public review and comment period ended on June 1, 2010.

In support of its Right-of-Way and CDCA Plan Amendment processes, the BLM has the responsibility to evaluate the environmental impacts of the proposed action, the No Action alternative, and other alternative actions that may meet the purpose and need for the proposed project. The Final EIS (FEIS) will be available for public review for 30-days before the BLM issues a Record of Decision (ROD). The decision regarding the ROW grant is appealable to the Interior Board of Land Appeals upon issuance of the ROD. The plan amendment decision is not an appealable decision but may be judicially challenged in Federal District Court.

1.2 Project Location and Description

The applicant has proposed to locate the ISEGS project in the Mojave Desert, near the Nevada border in San Bernardino County, California, on land administered by BLM. The proposed project site is located 4.5 miles southwest of Primm, Nevada and 0.5 mile west of the Primm Valley Golf Club which is located just west of the Ivanpah Dry Lake. Access to the site is from the Yates Well Road Interchange on I-15 via Colosseum Road.

The proposed ISEGS project is a solar concentrating thermal power plant, which is comprised of fields of heliostat mirrors focusing solar energy on boilers located on centralized power towers. Each mirror will track the sun throughout the day and reflect the solar energy to the receiver boiler. In each plant, one Rankine-cycle reheat steam turbine receives live steam from the solar boilers and reheats steam from the solar reheater. The solar field and power generation equipment would be put into operation

each morning after sunrise and insolation build-up, and shut down in the evening when insolation drops. Electricity would be produced by each plant's solar receiver boiler and the steam turbine generator.

The applicant proposes to develop the ISEGS project in three phases which are designed to generate a total of 400 MW of electricity. The first two phases of the project, Ivanpah 1 and 2, are designed to provide 100 MW of electricity and would occupy approximately 914 acres and 921 acres respectively; the 200 MW phase, Ivanpah 3, would require occupy approximately 1,836 acres. All three phases would be share an administration building, an operation and maintenance building, and substation which would be located in between Ivanpah 1 and 2 requiring an additional area of approximately 25 acres. Linear facilities, including re-routing of Colosseum Road, and natural gas, water, and transmission lines would require an additional 56 acres. Another 321 acres is needed for construction staging activities. ISEGS total project footprint amounts to approximately 4,073 acres (approximately 6.4 square miles).

The detailed description of the proposed project is documented within the applicant's Application for Certification to the Energy Commission (CH2M Hill 2007), as well as numerous applicant-submitted documents, responses to Data Requests, and management plans. These documents are all publicly available on the Energy Commission website at http://www.energy.ca.gov/sitingcases/ivanpah/index.html. These documents are referenced throughout the text of this FEIS where applicable, but are not otherwise attached as appendices to this FEIS.

Solar Power Plant Equipment and Facilities

Heliostats

Each heliostat would be configured with two mirrors hung in the portrait position. Each mirror would be 7.2 feet high by 10.5 feet wide, providing a reflective surface of 75.6 square feet (7.04 m^2) per mirror or 14.08 m^2 per heliostat (See Figure 3-4). The heliostats would be connected with communication cables strung aboveground between each heliostat. The communications cables would transmit signals from a computer-programmed aiming control system that would direct the movement of each heliostat to track the movement of the sun (CH2M Hill 2009a). The number of heliostats described under the Optimized Project Design (55,000 each for Ivanpah 1 and 2, and 104,000 for Ivanpah 3) represents the maximum number of heliostats that would be constructed; however, all of them may not be constructed.

Solar Power Towers

The site design would include one power tower for each Ivanpah 1 and 2 and five towers within Ivanpah 3, with heights of 459 feet each. The central power tower of Ivanpah 3 would include the power block with one steam turbine-generator (STG) supplied superheated steam by the five power tower boilers. Steam from the four quadrant solar power tower boilers would be conveyed by above-ground pipeline. Each solar power tower would be a metal structure designed specifically to support the boiler and efficiently move high-quality steam through a STG at its base. The power tower support structure would be about 120 meters high (approximately 393 feet). The

receiving boiler (which sits on top of the support structure) would be 20 meters tall (approximately 66 feet) including the added height for upper steam drum and protective ceramic insulation panels (See Figure 3-5). Additionally, a Federal Aviation Administration (FAA)-required lighting and a lightning pole would extend above the top of the towers approximately 10 feet. The height of the power towers allows heliostats from significant distances to accurately reflect sunlight to the receiving boiler. The receiving boiler is a traditional high-efficiency boiler positioned on top of the power tower. The boiler converts the concentrated energy of the sun reflected from the heliostats into superheated steam. The boiler's tubes are coated with a material that maximizes energy absorbance. The boiler has steam generation, superheating, and reheating sections and is designed to generate superheated steam at a pressure of 160 bars and a temperature of 550 degrees Celsius (°C).

Power Block

Each solar power plant (Ivanpah 1, 2 and 3) would have a power block located in the approximate center of the power plant area. The power block would include a solar power tower, a receiver boiler, a STG set, air-cooled condensers, and other auxiliary systems. Each of the three solar-thermal plants would include the following equipment and facilities in their power block:

- natural gas-fired start-up boiler;
- the air emission control system for the combustion of natural gas in the start-up boiler;
- steam turbine generator;
- air-cooled condenser;
- auxiliary equipment (feed water heaters, a de-aerator, an emergency diesel generator, diesel fire pump, etc.);
- a raw water tank with a 250,000 gallon capacity, to supply water for plant use and fire fighting; and a
- water treatment system.

Related Equipment and Facilities

Natural Gas Pipeline

The solar heat used in the boiler (steam) process would be supplemented by burning natural gas to heat a partial load steam boiler when solar conditions are insufficient. Each power plant within the project would include a small package, natural gas-fired start-up boiler to provide additional heat for plant start-up and during temporary cloud cover. Natural gas would be supplied to the site through a new, proposed six-mile long distribution pipeline ranging from 4 to 6 inches in diameter. From the Kern River Gas Transmission pipeline, the pipeline would extend 0.5 miles south to the northern edge of Ivanpah 3. The line would then run east along the northern edge, and then south along the eastern edge, of Ivanpah 3 to a metering station near the southeast corner of Ivanpah 3. From there, a supply line would extend northwest into the Ivanpah 3 power

block. The main pipeline would continue along the eastern edge of Ivanpah 2 to another metering station at its southeastern corner. Again, a branch supply line will extend northwestwards into the center of the Ivanpah 2 power block. From that station, the pipeline would follow the paved access road from Colosseum Road past the administration/warehouse building to the Ivanpah 1 power block. A new tap metering station of approximately 100 feet by 150 feet in area would be located at the Kern River Gas Transmission Line.

Air Pollution Control

Air pollution emissions from the combustion of natural gas in the start-up boiler would be controlled using best available control technology. Each boiler would be equipped with low-Nitrogen Oxide (NOx) burners for NOx control. Carbon Monoxide (CO) would be controlled using good combustion practices such as burner and control adjustment based on oxygen continuous monitoring, operator training and proper maintenance. Particulate and Volatile Organic Compounds (VOC) emissions will be minimized through the use of natural gas as the fuel.

Water Supply and Discharge

The facilities would require a water source to support operations, including process water consisting of make-up water for the steam system and wash water for the heliostats, and potable water for domestic water needs. Groundwater would be supplied from one of two wells that would be constructed at the northwest corner of Ivanpah 1, just outside the perimeter fence but within the construction logistics area. Each of the three power blocks would be connected to the groundwater wells by underground water pipelines. The applicant estimates project water consumption would not exceed a maximum of 100 acre-feet per year for all three solar plants combined, which would primarily be used to provide water for washing heliostats (mirrors) and to replace boiler feed water blow-down.

The quality of groundwater would be improved using a treatment system for meeting the requirements of the boiler make-up and mirror wash water. Water treatment equipment would consist of activated carbon filters, de-ionization media, and a mixed-bed polisher. Each power plant would have a 250,000 gallon raw water storage tank. Approximately 100,000 gallons would be usable for plant process needs and 150,000 gallons would be reserved for fire protection. Demineralized water would be stored in a 25,000-gallon demineralized water storage tank. Boiler feedwater make-up water would be stored in another 25,000-gallon tank.

Fire Protection

The fire protection system would be designed to protect personnel and limit property loss and plant downtime in the event of a fire. The primary source of fire protection water would be the 250,000 gallon raw water storage tank to be located in each power block. Approximately 100,000 gallons would be usable for plant process needs and 150,000 gallons would be reserved for fire protection. All fire protection systems would be focused on the power blocks, administration/warehouse building, and other areas of active operations. The project would not include any specific facilities to address potential wild fires.

Access Roads and Maintenance Paths

Access to the project site would occur from the Yates Well Road exit from I-15 to Colosseum Road. Colosseum Road, currently a dirt road, would be paved to a 30-foot wide, two lane road for a distance of 1.9 miles from the Primm Valley Golf Club to the facility entrance. Because the current route of Colosseum Road would be incorporated into the Ivanpah 2 plant site, the road would be re-routed around the southern end of Ivanpah 2 before re-joining the current road to the west of the proposed facility. Within the heliostat fields, maintenance paths would be established concentrically around the power blocks to provide access for heliostat washing and maintenance. The paths would be established between every other row of heliostats. An additional maintenance path would be established on the inside perimeter of the boundary fence. Within each unit, a diagonal dirt road would be established to provide access to the concentric maintenance paths and the power blocks.

Off-road, recreational vehicle trails currently authorized by BLM which run through the proposed project site would be re-located outside of the project boundary fence. The project boundary would overlap three existing open route designations; route 699226, route 699198, and a segment of Colosseum Road. Approximately 7,200 feet of route 699226 would be cut off by the Ivanpah 3 facility and another 6,500 feet of route 669198 would be cut off by the Ivanpah 2 facility. An estimated 5,000 feet of the Colosseum Road would also be cut off by the Ivanpah 2 facility. The closed portions of the three routes would be removed from the list of open routes on BLM's Off Highway Vehicle designation. The replacement routes would be part of the ROW grant for the project, and would remain open and maintained by the applicant for the life of the facility. The redirected routes and Colosseum Road would be designed and constructed to minimize damage to soil, watershed, vegetation, and air resources. These routes would be monitored by the applicant to avoid disruption to wildlife resources.

Construction Logistics Area, Substation, and Administrative Complex

The applicant proposes using a temporary construction logistics area for staging contractor equipment and trailers, assembly yards, storage of materials, equipment laydown and wash area, construction personnel parking, and assembly areas for heliostats. The construction logistics area would be located between Ivanpah 1 and 2 and would comprise approximately 377.5 acres. Following project construction, the majority of the area would undergo site closure, rehabilitation, and revegetation as described in the Draft Closure, Revegetation, and Rehabilitation Plan (CH2M Hill 2009b).

Fencing

The project area would be surrounded by security fence, which would be constructed of 8-foot tall galvanized steel chain-link, with barbed wire at the top as required. The security fence would surround the outer perimeter of each power plant, the substation, and the administrative complex. Tortoise barrier fence would also be installed in accordance with the Recommended Specifications for Desert Tortoise Exclusion Fencing (USFWS 2005). The tortoise fence would consist of 1-inch horizontal by 2-inch vertical galvanized welded wire. The fence would be installed to a depth of 12 inches,

and would extend 22 to 24 inches above the ground surface and integrated with the security fence.

In addition to use of the proposed right-of-way area, the applicant proposes some project-related activities to occur outside of the project fence, on land not included within the proposed right-of-way area. These would include inspection and maintenance of the fence, underground utility repairs, maintenance of drainage systems, and possible installation of new stormwater drainage systems. As discussed with respect to Access Roads above, a roadway would need to be maintained outside of the project fence to allow vehicle and equipment access for these activities.

Transmission System Interconnection and Upgrades

Onsite Transmission Facilities

The ISEGS project would deliver power from Ivanpah 1, 2 and 3 via three separate 115-kilovolt (kV) transmission generation tie lines to a new Ivanpah substation that would be owned and operated by Southern California Edison and located in the common construction logistics area between Ivanpah 1 and 2. The new Ivanpah substation would be about 850 feet by 850 feet and located on a little over 16 acres. Each of the power plants would have a switchyard with a step-up transformer to increase the 13.8 kV generator output voltage to 115 kV. The ISEGS #1 115 kV generator tie line would be approximately 5,800 feet long and supported by single-pole structures. The ISEGS #2 and #3 generator tie lines would share the same poles for the last 1,400 feet of their routes before they interconnect to SCE's Ivanpah Substation. The ISEGS #2 generator would connect to the Ivanpah Substation through a 115kV, 3,900 feet-long single circuit generator tie line built with the last 1,400 feet merged with the ISEGS #3 generator tie line to create a 1,400 feet long, overhead double circuit line prior to entering the Ivanpah Substation. The ISEGS #3 generator tie line would be an approximately 14,100 feet long, single circuit, 115 kV line and would merge into a 115kV double circuit with the ISEGS #2 generator tie line. In accordance with the Interconnection Agreement between the applicant and SCE, the existing Eldorado-Baker-Cool Water-Dunn Siding-Mountain Pass 115-kV line would loop in and out through the newly built Ivanpah Substation to interconnect the project to the SCE transmission grid. This 115-kV line is currently aligned between the Ivanpah 1 and 2 sites along a northeast-southwest right-of-way.

Eldorado – Ivanpah Transmission Line

In order to accommodate the total anticipated 1,400 MW load generation by ISEGS and five other planned renewable energy generation projects in the region, the California Independent System Operator (California ISO) has identified approximately 36 miles of transmission line within California and Nevada that would need to be upgraded from 115 kV to 230 kV. This upgrade of SCE's existing 115-kV line is known as the Eldorado-Ivanpah Transmission Project (EITP). Because the EITP is to be implemented by a different applicant and would occur whether or not the ISEGS proposed project were implemented, it is independent of the proposed ISEGS project, and is currently undergoing a separate environmental review under a joint Environmental Impact Report (EIR) and EIS by the California Public Utilities Commission (CPUC) and BLM. However, since the two projects would be directly linked, additional detailed information

regarding the scope of the EITP is provided in the following paragraphs. In the ISEGS FSA/DEIS, the EITP was considered a reasonably foreseeable future project because the proponent had not developed the project in enough detail to begin a joint analysis with ISEGS. That detailed project information on EITP is now available, so EITP is considered to be a cumulative action in this FEIS. The evaluation of cumulative impacts associated with the combination of the proposed ISEGS project with the EITP, presented in Section 5, is supported by additional information that was presented in the Draft EIR/EIS for the EITP, which was published on May 7, 2010. If the reader should desire additional detailed information regarding the EITP project, that information is available in the Draft EIR/EIS.

Telecommunications Facilities

The proposed Ivanpah Substation would also require that new telecommunication infrastructure be installed to provide protective relay circuit and a supervisory control and data acquisition (SCADA) circuit, together with data and telephone services. The telecommunication path from Ivanpah Substation to the local carrier facility interface at Mountain Pass area consists of approximately eight miles of fiber optic cable to be installed overhead on existing poles and through new underground conduits to be constructed in the substation and telecom carrier interface point. The fiber cable would be installed on the existing 12-kV distribution line poles.

Project Design and Management Approach

Stormwater Management Approach

The proposed project site is located on an alluvial fan that acts as an active stormwater conveyance between the Clark Mountain Range to the west and the Ivanpah Dry Lake to the east. The applicant's proposed stormwater design and management system is a Low-Impact Development (LID) design concept which attempts to minimize disruption to natural stormwater flow pathways. The elements of the applicant's design approach include minimizing the areas of direct removal of vegetation, minimizing the areas of grading and leveling, and minimizing the amount of active management of stormwater in engineered channels, ponds, and culverts.

Project Construction

The applicant anticipates ISEGS construction would be performed in the following order: 1) the Construction Logistics Area; 2) Ivanpah 1 (the southernmost site) and other shared facilities; 3) Ivanpah 2 (the middle site); and 4) Ivanpah 3 (the 200-MW plant on the north). However, it is possible that the order of construction may change. The shared facilities will be constructed in connection with the first plant construction, whether it is Ivanpah 1, 2, or 3. Prior to construction, geotechnical testing, heliostat installation tests, and heliostat load tests would be performed in each of the three units. Construction is planned to take place over approximately 48 months, with the applicant's desire that it could begin during the first quarter of 2010 and be completed during the fourth quarter 2013.

Project construction would be performed in accordance with plans and mitigation measures that would assure the project conforms with applicable laws and regulations

and would avoid or minimize adverse impacts. These plans that are to be developed by the applicant, for which some have already been prepared in draft and reviewed by BLM to support this environmental analysis, are specified in the mitigation measures as appropriate of each technical area of this FEIS. Of the plans already prepared in draft by the applicant, those that have contributed most significantly to define the proposed plan of development, including construction procedures, are as follows:

- Draft Contractor Health and Safety Standards (CH2M Hill 2009c)
- Administrative Draft ISEGS Construction Stormwater Pollution Prevention Plan (CH2M Hill 2009d)
- Preliminary Draft Plan, Revision 2, Drainage, Erosion, and Sediment Control Plan (CH2M Hill 2009e)
- Draft Raven Management Plan, ISEGS (CH2M Hill 2008a)
- Draft Desert Tortoise Translocation/Relocation Plan for ISEGS (CH2M Hill 2009f)
- Application for Incidental Take Permit Under Section 2081 of the Fish and Game Code (CH2M Hill 2009g)
- Draft Biological Assessment for the ISEGS Project (CH2M Hill 2008b)
- Streambed Alteration Agreement Application (CH2M Hill 2009h)
- Weed Management Plan for ISEGS, Eastern Mojave Desert (CH2M Hill 2008c)

The proposed facilities and procedures described in these documents have been used by BLM throughout the EIS process to evaluate potential impacts and mitigation measures. The documents have also undergone revision by the applicant throughout the process, in response to comments and questions from BLM and the Energy Commission. The documents are publicly available on the Energy Commission website at http://www.energy.ca.gov/sitingcases/ivanpah/index.html.

Facility Operation and Maintenance

The proposed project would be designed for an operational life of 50 years. During this period, project operations would be supported by a variety of operational, maintenance, and monitoring activities. Within the power blocks, operations would include transmission of water and natural gas into the power block, and operation of the natural gas-fired start-up boiler, the air emission control system for the combustion of natural gas in the start-up boiler, a steam turbine generator, an air-cooled condenser, and auxiliary equipment (feed water heaters, a de-aerator, and an emergency diesel generator, diesel fire pump).

Within the heliostat fields, operations would include routine washing of mirrors on a rotating basis, every two weeks. Washing would utilize water accessed from the groundwater supply wells, following treatment in the water treatment system. Washing would be done using a truck-mounted pressure washer. Maintenance would also include clipping of vegetation that could interfere with mirror movement to a height of 12 – 18 inches, management of weeds as specified in the Applicant's Weed Management

Plan (CH2M Hill 2008c), and use of soil binder and weighting agents to minimize dust accumulation on the mirrors and fugitive dust as could occur by wind or vehicle traffic.

Waste Management

Non-hazardous solid wastes generated during construction would include approximately 280 tons of scrap wood, concrete, steel/metal, paper, glass, scrap metals and plastic waste (CH2M Hill 2007, § 5.14.4.1.1). All non-hazardous wastes would be recycled to the extent possible and non-recyclable wastes would be collected by a licensed hauler and disposed in a Class III solid waste disposal facility. Hazardous wastes would be recycled to the extent possible and disposed in either a Class I or II waste facility as appropriate. All operational wastes produced at ISEGS would be properly collected, treated (if necessary), and disposed of at either a Class I or II waste facility as appropriate. Wastes include process and sanitary wastewater, nonhazardous waste and hazardous waste, both liquid and solid. A septic system for sanitary wastewater would be located at the administration building/operations and maintenance area, located between Ivanpah 1 and 2. Portable toilets would be placed in the power block areas of each the three solar facilities and pumped by a sanitary service provider. Process wastewater from all equipment, including the boilers and water treatment equipment would be recycled.

Hazardous Waste Management

Hazardous materials used during facility construction and operations would include paints, epoxies, grease, transformer oil, and caustic electrolytes (battery fluid). Several methods would be used to properly manage and dispose of hazardous materials and wastes. Waste lubricating oil would be recovered and recycled by a waste oil recycling contractor. Chemicals would be stored in appropriate chemical storage facilities. Bulk chemicals would be stored in large storage tanks, while most other chemicals would be stored in smaller returnable delivery containers. All chemical storage areas would be designed to contain leaks and spills in concrete containment areas.

Project Decommissioning

Following the operational life, estimated at 50 years, the project owner would perform site closure activities to meet federal and state requirements for the rehabilitation and revegetation of the project site after decommissioning. The procedures to be used for project decommissioning and restoration are defined in the Applicant's Closure, Revegetation, and Rehabilitation Plan – Revision 3 (CH2M Hill 2010). Under this plan, all aboveground structures and facilities would be removed offsite for recycling or disposal. Areas that had been graded would be restored to original contours. Succulent plant species would be salvaged prior to construction, transplanted into windrows, and maintained for later transplanting following decommissioning. Shrubs and other plant species would be revegetated by the collection of seeds and re-seeding following decommissioning. Decommissioning would be subject to many of the same environmental protection plans as are required for construction.

Mitigation Measures

Mitigation measures have been developed that would be implemented during all appropriate phases of the project from initial ground breaking, to operations, and through closure and decommissioning. The mitigation measures include a combination of the following:

- Measures that have been proposed by the applicant, and that effectively comprise a portion of the proposed action;
- Conditions of Certification (COCs) proposed by the California Energy Commission;
- Regulatory requirements of other federal, state, and local agencies;
- USFWS terms and conditions identified in the Biological Opinion; and
- Additional BLM-proposed mitigation measures and standard right-of-way (ROW) grant terms and conditions.

These requirements are generically referred to as "mitigation measures" throughout this FEIS. Table 4.0-1, in Section 4.0, describes the source of each of these measures, including identification of those that would be required by BLM as conditions of approval in the right of way grant.

1.3 Alternatives to the Proposed Project

Alternatives Identification and Screening

In this analysis of the ISEGS project, 25 alternatives to the ISEGS project have been developed and evaluated. These include nine alternative site locations, a range of different solar and renewable technologies, generation technologies using different fuels, and conservation/demand-side management. Of the 25 alternatives, the only alternatives that were determined to be both feasible and have the potential to result in lesser impacts were:

- Mitigated Ivanpah 3 Alternative
- Modified I-15 Alternative
- No Action Alternative

After a comprehensive evaluation of the nine alternative site locations, only the I-15 and Reduced Acreage alternatives, among the site alternatives, were found to have a potential to avoid or minimize adverse effects on the human environment. These two alternatives were retained for more detailed analysis in Section 4, the Environmental Consequences chapter.

Alternative solar thermal technologies (parabolic trough, Stirling dish, utility scale solar photovoltaics, and linear Fresnel) were considered. As with the proposed distributed power tower technology, these technologies would not substantially reduce visual impacts or biological resources impacts, though land requirements vary among the

technologies. Rooftop solar photovoltaic (PV) facilities would likewise require extensive acreage, although rooftop PV could minimize the need for undisturbed open space. However, increased deployment of rooftop solar PV faces challenges in manufacturing capacity, cost, and policy implementation. Finally, these alternative solar technologies were not the subject of the application received by the BLM. Although reasonable alternatives to the proposed action may include those that are practicable or feasible from a technical and economic standpoint, rather than simply desirable from the applicant's perspective, it is not within the FLPMA authority granted to BLM to direct a project applicant to the specific type of technology or system of energy development on the public lands. For BLM to dictate a project applicant's business model, and hence its technical or economic feasibility, is highly irregular. However, for NEPA purposes, these alternative technologies were identified but eliminated from full analysis as explained in the body of the text in the FEIS.

Other generation technologies (wind, geothermal, biomass, tidal, wave, natural gas, and nuclear) were also examined as possible alternatives to the proposed solar project. These technologies would either be infeasible at the scale of the ISEGS project, or would not eliminate adverse impacts caused by the ISEGS project without creating their own adverse impacts in other locations. A natural gas plant would contribute to greenhouse gas emissions and would not meet the project's renewable generation objective. Construction of new nuclear power plants is currently prohibited under California law. In addition, these alternatives would not meet the purpose and need for the project, are not reasonable, and many are not within the decision space of the BLM. For instance, tidal and wave energy sources are not within the types of energy sources found on public lands. These alternative energy technologies were eliminated from full discussion in the EIS as noted therein.

Conservation and demand side management programs would likely not meet the state's growing electricity needs that could be served by the ISEGS project. In addition, these programs would not provide the renewable energy required to meet the California Renewable Portfolio Standard requirements.

Mitigated Ivanpah 3 Alternative

- In support of the analysis of a reduced acreage alternative, BrightSource (the applicant) submitted a Biological Mitigation Proposal, also referred to as the "Mitigated Ivanpah 3" proposal, on February 11, 2010 (BSE 2010a). The Mitigated Ivanpah 3 proposal was presented for consideration to BLM as an alternative to the proposed project. The Mitigated Ivanpah 3 proposal seeks to address the impacts identified in the DEIS by proposing a facility with the following characteristics:
- Using the same concentrating solar power technology as in the proposed project;
- Reducing the number and modifying the arrangement of heliostats and power towers, thus reducing the overall acreage requested for the ROW authorization;
- Proposing the revised arrangement of heliostats and power towers in a manner that avoids the northern portion of the Ivanpah 3 Unit, and thus reduces the

identified impacts associated with special-status plants, desert tortoises, Visual Resources, and Soil and Water Resources in that area.

A detailed description of the Mitigated Ivanpah 3 proposal is presented in Section 3, and its potential impacts are evaluated in Section 4. The project revision to propose the Mitigated Ivanpah 3 Alternative would reduce the acreage associated with Ivanpah Unit 3 by moving the northern boundary of the ROW grant approximately 1900 feet south of its location in the proposed project, resulting in a reduction of 433 acres of disturbance in that area, as well as a reduction of 433 acres in the total overall ROW grant. The 433-acre area that would be eliminated from the proposed project alternative would be designated as the Northern Rare Plant Mitigation Area (BSE 2010a). The alternative would also eliminate the need to grade approximately 109 acres within the 377-acre Construction Logistics Area (CLA) area. This area would remain within the ROW grant for the Mitigated Ivanpah 3 Alternative, and 67.5 acres of this area would be used as a Rare Plant Transplantation and Succulent Nursery Area. The alignment of the natural gas pipeline ROW, which would follow the northern boundary of Ivanpah Unit 3 in the proposed project alternative, would be extended to and along the revised northern boundary in the Mitigated Ivanpah 3 Alternative. The remainder of the acreage for the requested ROW grant would remain the same as that for the proposed project. However, other facilities and infrastructure within that footprint, including the boundary between Ivanpah 2 and 3, would be adjusted as needed to allow for construction and operation of the revised project design. The total acreage requested for the ROW for the Mitigated Ivanpah 3 Alternative would be 3564.2 acres.

An evaluation of the environmental impacts of the proposal is presented in Section 4. The Mitigated Ivanpah 3 Alternative would accomplish all of the objectives of the purpose and need, including meeting power demand, as well as federal and state objectives for renewable energy development. It would also achieve almost all of the beneficial impacts of the proposed project, including socioeconomic benefits of increases in employment and fiscal resources, and displacement of greenhouse gas and air pollutant emissions associated with fossil-fueled power plants. While meeting these objectives and providing these beneficial impacts, the direct and cumulative adverse impacts of the Mitigated Ivanpah 3 Alternative would be lower than the proposed project, specifically in the areas of Biological Resources (including DT, and special-status plant species), Soil and Water, Visual Resources, Land Use, and Traffic and Transportation. The reduction in impacts would be accomplished by eliminating the northern 433-acre portion of Ivanpah Unit 3 from the project footprint, eliminating grading of approximately 109 acres within the 377-acre CLA area, and using 67.5 acres of the CLA as a Rare Plant Transplantation and Succulent Nursery Area.

Modified I-15 Alternative

To support the analysis of a Modified I-15 Alternative, the applicant submitted a map showing a proposed reconfiguration of Ivanpah Unit 3 to BLM on March 17, 2010 (BSE 2010b). The Modified I-15 Alternative would use the same technology and configuration of components as the Mitigated Ivanpah 3 Alternative, but would seek to further reduce

impacts to Biological Resources by placing Ivanpah Unit 3 in an area which is reported to have a lower density of those resources.

A detailed description of the Modified I-15 Alternative, which involves a reconfiguration of Ivanpah Unit 3 in a location closer to Interstate 15, is presented in Section 3. The Modified I-15 Alternative would reduce the acreage associated with Ivanpah Unit 3, and in the overall ROW grant, by 433 acres. The alternative would also eliminate the need to grade approximately 109 acres within the 377-acre CLA area. This area would remain within the ROW grant for the Modified I-15 Alternative, and 67.5 acres of this area would be used as a Rare Plant Transplantation and Succulent Nursery Area. The alignment of the natural gas pipeline ROW, which would follow the northern boundary of Ivanpah Unit 3 in the proposed project alternative, would be extended to and along the northern boundary of Ivanpah Unit 2 in the Modified I-15 Alternative. The remainder of the acreage for the requested ROW grant would remain the same as that for the proposed project. However, other facilities and infrastructure within that footprint would be adjusted as needed to allow for construction and operation of the revised project design. The total acreage requested for the ROW for the Modified I-15 Alternative would be 3,564.2 acres.

An evaluation of the environmental impacts of the alternative is presented in Section 4. The Modified I-15 Alternative would also accomplish all of the objectives of the purpose and need, including meeting power demand, as well as federal and state objectives for renewable energy development. It would also achieve almost all of the beneficial impacts of the proposed projects, including socioeconomic benefits of increases in employment and fiscal resources, and displacement of greenhouse gas and air pollutant emissions associated with fossil-fueled power plants. While meeting these objectives and providing these beneficial impacts, the adverse impacts of the Modified I-15 Alternative would be lower than the proposed project in some areas, but would be increased in other areas. With respect to Biological Resources, the Modified I-15 Alternative would likely have a reduced impact on high quality desert tortoise habitat, as a result of avoiding the northern 433-acre portion of Ivanpah Unit 3, as well as reconfiguring Ivanpah Unit 3 in a location which partially overlaps the lower quality habitat adjacent to Interstate 15. By including this lower quality habitat within the reconfigured Ivanpah Unit 3 boundaries, the overall impact of the Modified I-15 Alternative on the desert tortoise is likely to be lower than that of the Mitigated Ivanpah 3 Alternative, and for purposes of analysis in the EIS, the overall impact to desert tortoise habitat was assumed to be less; however, this assumption cannot be confirmed without formal surveys of the reconfigured Ivanpah Unit 3 area.

Impacts of the Modified I-15 Alternative to Visual Resources and potential glare impacts for viewers on Interstate 15 would increase over those of both the proposed project and the Mitigated Ivanpah 3 Alternative, due to the placement of heliostat fields within 1,000 feet of the highway for a distance of 1.8 miles. The Modified I-15 Alternative could also result in an increase in impacts to recreational access as compared to the proposed project and Mitigated Ivanpah 3 Alternative, due to the greater length of existing OHV trails that would be included within the project footprint.

1.4 Public and Agency Coordination

Both the Energy Commission's Environmental Quality Act (CEQA)-equivalent process and the BLM's NEPA process provide opportunities for the public and other agencies to participate and consult in the scoping of the environmental analysis, and in the evaluation of the technical analyses and conclusions of that analysis. The following subsections describe the status of these outreach efforts.

Agency Coordination

California Energy Commission

The Energy Commission has the exclusive authority to certify the construction, modification, and operation of thermal electric power plants 50 megawatts (MW) or larger. The Energy Commission certification is in lieu of any permit required by state, regional, or local agencies and by federal agencies to the extent permitted by federal law (Pub. Resources Code, § 25500). The Energy Commission must review power plant AFCs to assess potential environmental impacts including potential impacts to public health and safety, potential measures to mitigate those impacts (Pub. Resources Code, § 25519), and compliance with applicable governmental laws or standards (Pub. Resources Code, § 25523 (d)). In the development of their Final Staff Assessment, the Energy Commission staff's analyses were prepared in accordance with Public Resources Code, section 25500 et seq.; Title 20, California Code of Regulations, section 1701 et seq.; and CEQA (Pub. Resources Code, § 21000 et seq.).
As discussed above, the DEIS for this proposed project was developed as a joint environmental review document, the FSA/DEIS, under an MOU between the Energy Commission and BLM California State Office. Throughout the environmental review process, BLM and Energy Commission staff have conducted joint technical analysis, and co-authored the FSA/DEIS. Following the completion of the FSA/DEIS, BLM and the Energy Commission's environmental review process was separated, as BLM prepared a stand-alone SDEIS and this FEIS, and the Energy Commission prepared a stand-alone FSA Addendum to evaluate additional project alternatives. Throughout the process subsequent to the publication of the FSA/DEIS, BLM and Energy Commission staff have continued to coordinate through conference calls and the review of each other's documents.

The Energy Commission certification is in lieu of any permit required by state, regional, or local agencies and by federal agencies to the extent permitted by federal law (Pub. Resources Code, § 25500). However, both the Commission and BLM typically seek comments from and work closely with other regulatory agencies that administer laws and regulations that may be applicable to the proposed project.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) has jurisdiction to protect water quality and wetland resources under Section 404 of the Clean Water Act. Under that authority, USACE reviews proposed projects to determine whether they may impact such resources, and/or be subject to a Section 404 permit. Throughout the DEIS process, the Energy Commission, BLM, and the applicant have provided information to the

USACE to assist them in making a determination regarding their jurisdiction and need for a Section 404 permit. The USACE rendered a final opinion on May 28, 2009 concluding that the project does not affect waters of the U.S. and thus does not require such a permit.

National Park Service

The National Park Service manages the Mojave National Preserve (MNP), which is located near the proposed project area. Because of the proximity of the MNP, the Park Service has been invited to participate in scoping meetings and public workshops, and has been provided the opportunity review and provide comment on the Preliminary Staff Assessment (PSA) and DEIS.

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction to protect threatened and endangered species under the Endangered Species Act (ESA). Formal consultation with the USFWS under Section 7 of the ESA is required for any federal action that may adversely affect a federally-listed species. The desert tortoise (*Gopherus agassizii*), which occurs in the proposed project area, is a federally-listed threatened species, and therefore formal consultation with the USFWS is required. This consultation has been initiated through the preparation and submittal of a Biological Assessment (BA) which describes the proposed project to the USFWS. Following review of the BA, the USFWS is expected to issue a Biological Opinion (BO) which will specify mitigation measures that must be implemented for the protection of the desert tortoise.

State Water Resources Control Board/Regional Water Quality Control Board

The Lahontan Regional Water Quality Control Board (RWQCB) has the authority to protect both surface water and groundwater resources at the proposed project location. Throughout the EIS process, the Energy Commission, BLM, and the applicant have invited the RWQCB to participate in public scoping and workshops, and have provided information to assist BLM in evaluating the potential impacts and permitting requirements of the proposed project. The RWQCB has responded by providing comments that have been evaluated and incorporated into the EIS analysis. The RWQCB has also made a determination that the proposed project would impact waters of the state, and has specified conditions to satisfy requirements of a dredge and fill permit/waste discharge requirements. These requirements have been included as mitigation measures in Section 4.10.

California Department of Fish and Game

The California Department of Fish and Game (CDFG) has the authority to protect water resources of the state through regulation of modifications to streambeds, under Section 1602 of the Fish and Game Code. The Energy Commission, BLM, and the applicant have provided information to CDFG to assist in their determination of the impacts to streambeds, and identification of permit and mitigation requirements. The applicant filed a Streambed Alteration Agreement with CDFG on June 2, 2009. The requirements of the Streambed Alteration Agreement will be included as a recommended Mitigation Measure.

CDFG also has the authority to regulate potential impacts to species that are protected under the California Endangered Species Act (CESA). On May 22, 2009, the applicant filed an application for authorization for incidental take of the desert tortoise under Section 2081(b) of the CESA. The requirements of the Incidental Take Permit have been included as a recommended Mitigation Measure.

County of San Bernardino

On March 18, 2008, the BLM California Desert District entered into an MOU with the County of San Bernardino to coordinate environmental reviews for renewable energy projects on public land within the County. Under this MOU, BLM invites the County to become a cooperating agency for EISs, and provides opportunities for County staff to review and participate in technical discussions and analyses. For the proposed project, the County has elected to become a cooperating agency. BLM continues to provide the County with project-related documentation for their review and evaluation, and the County has provided guidance for protection of groundwater resources which has been incorporated into Section 4.10 of this document.

Public Coordination

Both the Energy Commission's CEQA-equivalent process and the BLM's NEPA process provide opportunities for public participation in the scoping of the environmental analysis, and in the evaluation of the technical analyses and conclusions of that analysis. For the Energy Commission, this outreach program is primarily facilitated by the Public Adviser's Office (PAO). As part of the coordination of the environmental review process required under the Energy Commission/BLM California MOU, the agencies have jointly held public meetings and workshops which accomplish the public coordination objectives of both agencies. This is an ongoing process that to date has involved the following efforts.

Libraries

The AFC was sent to the main county libraries in San Bernardino, Barstow, Fresno, and Eureka; the main branches of the San Diego and San Francisco public libraries; the University Research Library at UCLA; the California State Library, and the Energy Commission's library in Sacramento.

Outreach Efforts

BLM solicited interested members of the public and agencies through the NEPA scoping process. BLM published a Notice of Intent to develop the EIS and amend the CDCA Plan in the Federal Register, Vol. 72, No. 214, page 62671, on November 6, 2007. The initial Public Scoping meeting was held on January 4, 2008, and coincided with the Informational Hearing held by the Energy Commission. On January 9, 2009, BLM published notice of an extension of the public scoping period, and an additional joint public scoping meeting was held on January 25, 2008.
Following the scoping period, the Energy Commission and BLM held additional joint Issue Resolution workshops which were announced and made available to the public. These workshops were held on June 23, 2008 in Primm, Nevada, and on July 31 and

December 15, 2009 in Sacramento, California. The Energy Commission continued to accept and consider public comments, and granted petitions to intervene to eight interested groups including Defenders of Wildlife, Sierra Club, Basin and Range Watch, and Center for Biological Diversity (June 2, 2009), California Native Plant Society, Western Watersheds, CURE, and San Bernardino County. Although not officially part of BLM's NEPA process, BLM's NEPA analysis was supported by information received through these activities.

The BLM public participation process included soliciting comments regarding the scope of the analysis from other government agencies, the public, and non-governmental organizations. The persons and organizations which provided scoping comments, and the general issues addressed within their comments, are provided in **Table 2.1**.

Summary of Public Comments on DEIS and Supplemental DEIS

The Notice of Availability of the DEIS was published on November 10, 2009; the 90-day public review and comment period ended on February 11, 2010. During the public comment period, a variety of activities occurred in which BLM received additional information regarding the proposed project and potential alternatives, impacts, and mitigation measures. These activities included:

- Receipt of comments from the public, and other local, state, and federal agencies during the public comment period;
- Public testimony by Energy Commission staff and consultants, BrightSource staff and consultants, and intervenors associated with the Energy Commission certification process for ISEGS;
- Workshops, involving BLM staff and consultants as well as the above groups, to consider and evaluate impact conclusions and mitigation approaches; and
- Submittal of additional technical reports, project design information, impact analyses, and applicant-proposed mitigation measures by BrightSource.

BLM received comments on the DEIS from 37 individuals, groups, and agencies. These comments are summarized in Appendix A-1 of this FEIS. Comments from 20 individuals, groups, and agencies were received on the SDEIS, and these comments are summarized in Appendix A-2 of this FEIS. Both sets of comments included hundreds of comments received both in favor of the project, and in opposition to the project, in the form of mass mailings and e-mails. The summaries in Appendices A-1 and A-2 include a description of how each comment was evaluated and responded to by BLM. Also, where a comment is particularly relevant to the technical discussion in the text of the FEIS (either comments resulting in revision to the FEIS, or comments dissenting from important conclusions of the FEIS), that information has been incorporated into the revisions for the FEIS. Section 9 also provides a discussion of the comments, including both those which resulted in a change to the text in the FEIS, and those which were considered, but did not result in a change. The comments generally addressed the following topics

- The range of alternatives considered and evaluated, and the methodology for evaluating the alternatives;

- The scope of projects considered in the cumulative impacts analysis, and the methodology for conducting that analysis;
- Opposition to the contribution of the project to industrialization of Ivanpah Valley; and
- Specific comments related to impacts to biological resources, the Mojave National Preserve, air traffic, County services, and other resources.

The applicant's Application for Certification to the Energy Commission (CH2M Hill 2007), the Energy Commission's PSA, and the joint BLM/Energy Commission FSA/DEIS are all publicly available on the Energy Commission website at http://www.energy.ca.gov/sitingcases/ivanpah/index.html.

1.5 Environmental Justice

Executive Order 12898, "Federal Actions to address Environmental Justice in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on federal agencies to achieve environmental justice as part of this mission. The order requires the USEPA and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

The steps recommended to assure compliance with the Executive Order are: (1) outreach and involvement; (2) a screening-level analysis to determine the existence of a minority or low-income population; and (3) if warranted, a detailed examination of the distribution of impacts on segments of the population. BLM has followed each of the above steps for the following 11 sections in the EIS: Air Quality, Hazardous Materials, Land Use, Noise, Public Health and Safety, Socioeconomics and Environmental Justice, Soils and Water, Traffic and Transportation, Transmission Line Safety/Nuisance, Visual Resources, and Waste Management.

According to the Census 2000 data there were 36 people within six miles of the proposed project site which resided within California. Ten of these people (27.8 percent) were classified as minority (see **Figure 4.9-1**). No census blocks within a six-mile radius of the proposed ISEGS site contain minority populations greater than 50 percent. The 2000 Census block data did not identify any California residents living below the designated poverty level within a six-mile radius of the project site.

No minority communities or low income communities are located within or adjacent to the proposed project areas. The proposed action would not impact distinct Native American cultural practices or result in disproportionately high or adverse human health or environmental effects on minority communities.

1.6 Organization of the EIS

The FEIS is organized as follows:

Section 1 – Executive Summary summarizes the EIS.

Section 2 – Introduction discusses the purpose and need for the proposed project, as well as BLM's processes for the CDCA Plan Amendment and the EIS.

Section 3 – Alternatives, Including the Proposed Action, provides a detailed description of the proposed project and those alternatives which have been retained for detailed evaluation. The section also describes BLM's methodology for identifying and screening alternatives, and describes the rationale for elimination of other alternatives from detailed evaluation.

Section 4 – Affected Environment and Environmental Consequences. The environmental and public health and safety analyses of the proposed project are contained in Section 4. They include the following: Air Quality, Greenhouse Gases, Biological Resources, Cultural Resources and Native American Values, Hazardous Materials Management, Land Use, Noise and Vibration, Public Health and Safety, Socioeconomics and Environmental Justice, Soil and Water Resources, Traffic and Transportation, Transmission Line Safety and Nuisance, Visual Resources, Waste Management, , Worker Safety and Fire Protection, Geology, Paleontology and Minerals, Livestock Grazing, Wild Horses and Burros, and Recreation.

Each of these 19 technical area assessments includes a discussion of:

- Detailed project-specific information that is directly relevant to the resource being evaluated;
- Laws and regulations;
- Affected environment;
- Project direct and indirect impacts from construction, operations, and closure and decommissioning impacts;
- Beneficial impacts;
- Impacts of alternatives, including the No Action Alternative;
- Mitigation Measures; and
- Summary

Section 5 – Cumulative Effects, including identification of the past, present, and reasonably foreseeable future projects, and an evaluation of the cumulative impacts resulting from those projects in combination with the proposed project and alternatives.

Section 6 – Other NEPA Considerations provides an evaluation of the irreversible and irretrievable commitment of resources, unavoidable adverse impacts, and growth inducing effects.

Section 7 – General Conditions, which provides the General Conditions of Approval that are proposed for inclusion in the ROW grant.

Section 8 – Summary, which summarizes the results of the environmental analysis, and identifies BLM's preferred alternative.

Section 9 – Public Participation summary

Section 10 – List of Preparers

Section 11 – References

Appendix A provides a summary of public comments received on the DEIS and SDEIS, including BLM's responses to the comments.

Appendix B contains technical resource-specific appendices that provide additional information to support the technical analyses in Section 4.

Appendix C provides additional information developed by the Energy Commission which is not part of BLM's environmental analysis, but describes additional features of the proposed action. This includes the Energy Commission's General Conditions of Certification that are specific to the Energy Commission's certification process. In addition, engineering analyses performed by the Energy Commission are included in Appendix C, and include sections on Facility Design, Power Plant Efficiency, Power Plant Reliability, and Transmission System Engineering.

1.7 Summary of Project Related Impacts

Air Quality

Potential impacts to air quality are summarized as follows:

- The project would not have the potential to exceed Prevention of Significant Deterioration (PSD) emission levels during direct source operation and the facility is not considered a major stationary source with potential to cause adverse air quality impacts. However, without adequate fugitive dust mitigation, the project would have the potential to exceed the General Conformity PM10 applicability threshold during construction and operation, and could cause potential localized exceedances of the PM10 National Ambient Air Quality Standards (NAAQS) during construction and operation. Mitigation measures **AQ-SC1** through **AQ-SC4**, for construction, and **AQ-SC7**, for operation, would reduce the volume of emissions, and thus reduce the potentially adverse, direct impacts and the contribution of the proposed project to indirect and cumulative impacts.
- The project would comply with applicable District Rules and Regulations, including New Source Review requirements, as required by the Mojave Desert Air Quality Management District (MDAQMD) Final Determination of Compliance (FDOC) for the proposed project.
- The project's construction activities would likely contribute to adverse PM10 and ozone impacts. Mitigation measures **AQ-SC1** to **AQ-SC4** would reduce the magnitude of these potential impacts.
- The project's operation would not cause new violations of any NO_2, SO_2, PM2.5 or CO ambient air quality standards, and therefore, the project direct operational NOx, SOx, PM2.5 and CO emission impacts would not be adverse.
- The project's direct and indirect, or secondary emissions contribution to existing violations of the ozone and PM10 ambient air quality standards are likely to be

adverse, unless they are reduced through mitigation. Mitigation measure **AQ-SC7** would mitigate the operating fugitive dust emissions to ensure that the potentially adverse ozone and PM10 impacts are reduced over the life of the project.

Overall, the air quality impacts associated with the Mitigated Ivanpah 3 and Modified I-15 Alternatives would be lower than those associated with the proposed project. Overall project air emissions for both alternatives, as compared to the proposed project, would be reduced due to the reduction in the size of the Ivanpah Unit 3 boiler, and the reduced area of ground disturbance associated with project construction. The re-location of the Ivanpah Unit 3 power block would result in a small increase in one-hour NOx emissions detected at the site boundary. However, these increased emissions would not exceed any of the regulatory thresholds, and would be very limited in duration.

Although the emissions for both alternatives would be lower than those for the proposed project, they would still cause direct, adverse impacts to air quality, and would also contribute, along with other proposed projects in the area, to a cumulative adverse impact on air quality. However, the mitigation measures discussed above would ensure that emissions would not exceed any NEPA or permitting criteria.

Greenhouse Gases

The Ivanpah Solar Electric Generating System project would emit considerably less greenhouse gas (GHG) than existing power plants and most other generation technologies, and thus would contribute to continued improvement of the overall western United States, and specifically California, electricity system GHG emission rate average. The project would lead to a net reduction in GHG emissions across the electricity system that provides energy and capacity to California. Thus, the proposed project would result in a cumulative overall reduction in GHG emissions from the state's power plants, would not worsen current conditions, and would thus not result in adverse impacts.

GHG emissions from construction activities would not be adverse for several reasons. First, the period of construction would be short-term and not ongoing during the life of the project. Additionally, the best practices control measures included in the mitigation measures, such as limiting idling times and requiring, as appropriate, equipment that meets the latest emissions standards, would further minimize greenhouse gas emissions since the use of newer equipment will increase efficiency and reduce GHG emissions and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that will likely be part of the ARB regulations to reduce GHG from construction vehicles and equipment. For all these reasons, the short-term emission of greenhouse gases during construction would be sufficiently reduced and would, therefore, not be adverse.

The Ivanpah Solar Electric Generating System project, as a solar project with a nightly shutdown, will operate less than 60% of capacity and is therefore not subject to the requirements of SB 1368 and the Greenhouse Gas Emission Performance Standard.

However, the Ivanpah Solar Electric Generating System project would easily meet the requirements of SB 1368 and the Greenhouse Gas Emission Performance Standard.

Overall, the emission of greenhouse gases associated with the Mitigated Ivanpah 3 and Modified I-15 Alternatives would be lower than those associated with the proposed project, due to the reduction in the size of the Ivanpah Unit 3 boiler, elimination of an emergency generator, and reduced construction duration associated with the alternatives. However, the Mitigated Ivanpah 3 and Modified I-15 Alternatives would also produce less power output, 370 MW versus 400 MW for the proposed project. As a result, the alternatives would not achieve the same level of beneficial impact of the proposed project in displacing emissions associated with fossil fuel-generating plants.

Biological Resources

The proposed project would have direct, adverse impacts to 4,073 acres of desert tortoise habitat, which would require state and federal endangered species "take" authorizations. The tortoises present in the ROW area would be removed and translocated to an area to the west of the project site. In addition to the direct loss of tortoise habitat, the proposed project would also fragment and degrade adjacent habitat, and could promote the spread of invasive plants and desert tortoise predators (ravens). The proposed project would also directly impact breeding and/or foraging habitat for other special-status wildlife species, including burrowing owl, loggerhead shrike, Crissal thrasher, golden eagle, and American badger. The proposed project would also impact vegetation in the 4,073-acre project area, including one species considered sensitive by BLM (the Rusby's desert-mallow). Finally, the proposed project would adversely impact ephemeral drainages through site grading, compaction, and construction of infrastructure within drainage channels. Although the proposed project construction method, Low Impact Development, would be designed to minimize direct impacts to these drainages, it is assumed that all 2,000 ephemeral drainages (198 acres of waters of the state) would be impacted, and would subject to a streambed alteration agreement with the CDFG. For each of these NEPA impacts identified, mitigation measures that have been proposed by the applicant, Energy Commission staff, other state and federal agencies, and BLM have been developed.

In addition to the evaluation of impacts under NEPA, the analysis of biological impacts of the proposed project in the DEIS included an evaluation of impacts to species considered sensitive under CEQA by the Energy Commission, including plant species listed by the California Native Plant Society (CNPS). For these species, the Energy Commission staff proposed additional Conditions of Certification to reduce the identified impacts. Implementation of these additional Conditions of Certification on public lands would require BLM consent.

The Mitigated Ivanpah 3 alternative would reduce surface disturbance impacts by a total of 433 acres. Of this total, 433 acres located along the northern portion of the proposed Ivanpah 3 site would be removed from the project, preserving an area of diverse, relatively undisturbed native habitat that contains few noxious or invasive weeds. The habitat contains numerous ephemeral drainages, adding to the locations diversity. Many of sensitive species, including desert tortoise utilize this area.

The Mitigated Ivanpah 3 Alternative was developed, in part, to reduce the impacts to wildlife and special status species. By reducing the project footprint by approximately 12.5 percent, the Mitigated Ivanpah 3 Alternative would result in a reduction in impacts to wildlife and special status species. Since the 433-acre area that would remain undisturbed is considered of relatively high quality and diverse native habitat, the benefits would be greater than avoidance of comparable acreage in other, lower quality habitat areas. Further, the location and magnitude of the Mitigated Ivanpah 3 Alternative helps retain large-scale ecological processes and migration corridors that are beneficial to wildlife species.

While the impacts from the Mitigated Ivanpah 3 Alternative would be less and would preserve some of the highest quality habitat, there would be long-term impacts to biological resources in comparison with the No Action Alternative.

The reconfiguration of the proposed Ivanpah Unit 3 to a site adjacent to I-15 would likely result in a reduction in overall impacts to biological resources. For desert tortoise, the Modified I-15 Alternative site would be located within an area already impacted by the proximity of the highway. It is estimated that 315 acres of the reconfigured location of Ivanpah Unit 3, equivalent to 25 percent of the Unit, is adversely impacted by the presence of the highway. Habitat is variable, with areas located below 2,750-feet in elevation consisting of lower quality habitat due to terrain (flat topography with fewer washes), lower forage quality, and proximity to the highway. Fewer tortoises and burrows have been reported at the alternative site (Berry 1984, Cashen 2010), although formal surveys have not been conducted. Consequently, the co-location of the Modified I-15 Alternative with the highway, coupled with fewer acres of high quality tortoise habitat, would likely result in fewer impacts to desert tortoise. Further, some of the highest densities of desert tortoise and highest quality habitat in the project area (the proposed Ivanpah Unit 3 site) would be avoided. Overall, impacts from the Modified I-15 Alternative likely would be less than the proposed project, but would remain greater than the No Action Alternative. Formal consultation with the USFWS will be required for desert tortoise impacts.

Reconfiguration of the Ivanpah Unit 3 site to the Modified I-15 Alternative site co-locates major facilities, while avoiding impacts to the northern portion of the proposed project area. As a consequence, movement corridors between mountainous areas north of the project area remain broad and relatively undisturbed. Human activities associated with the project are less likely to adversely impact big game species, including desert bighorn sheep, as well as other species (e.g., birds, bats) associated with mountainous habitats. Co-location would also reduce habitat fragmentation, leaving large portions of higher quality contiguous habitat intact.

Because the Modified I-15 Alternative would result in direct and indirect affects to wildlife species (e.g., vehicle-wildlife collisions, lower habitat quality within the highway easement, noise, artificial lighting), co-location would reduce adverse impacts to biological resources, while avoiding high quality habitat along the northern portion of the project area.

While some of the habitat within the Modified I-15 Alternative is similar in quality to the Ivanpah Unit 3 site, much of the alternative's habitat located below 2,750-feet in

elevation is less diverse and of lower quality than that associated with the proposed project. Although surveys have not been conducted, it is anticipated that there would be fewer acres capable of sustaining rare plant communities, compared to the original Ivanpah Unit 3 site in the proposed project.

The Modified I-15 Alternative was developed, in part, to reduce the impacts to wildlife and special status species by reconfiguring Ivanpah Unit 3 in an area which may have fewer desert tortoises than the location of Ivanpah Unit 3 in the proposed project. The Modified I-15 Alternative likely would reduce impacts to desert tortoise, and also probably to rare plant species, although field surveys would be necessary to confirm this assessment. Big game and other wildlife species would benefit from co-location with the highway, minimizing habitat fragmentation, retaining movement corridors, and avoiding impacts to high quality habitat along the northern portion of the proposed project.

While the impacts from the Modified I-15 Alternative would be less than those associated with the proposed project, there would still be long-term impacts to biological resources in comparison with the No Action Alternative.

Cultural Resources

The proposed project would have no diirect or indirect adverse impacts on known or unknown, National Register of Historic Places (NRHP)-eligible archaeological, ethnographic, or built-environment resources. With the adoption and implementation of mitigation measures **CUL-8** and **CUL-9**, the cumulative effect of the proposed project on the one presently known NRHP-eligible listed resource, the Hoover Dam-to-San Bernardino transmission line (CA-SBR-10315H), would be reduced.

The implementation of mitigation measures **CUL-1** through **CUL-7** and **CUL-10** would require identification and proper management of any resources found during the course of the construction, operation, maintenance, closure, or decommissioning of the project. **CUL-1** through **CUL-7**, and **CUL-10** are intended to facilitate the identification and assessment of previously unknown archaeological resources encountered during construction-related ground disturbance and to mitigate any adverse impacts from the project on any newly found resources assessed as NRHP-eligible. To accomplish this, mitigation measures provide for the hiring of a Cultural Resources Specialist and archaeological monitors, for cultural resources awareness training for construction workers, for the archaeological and Native American monitoring of ground-disturbing activities, in particular situations, for the recovery of data from NRHP-eligible discovered archaeological deposits, for the writing of a technical archaeological report on all archaeological activities and findings, and for the curation of recovered artifacts and other data. When properly implemented and enforced, these mitigation measures would reduce any adverse impacts to previously unknown cultural resources encountered during construction or operation. Additionally, with the adoption and implementation of these mitigation measures, the ISEGS project would be in conformity with all applicable laws and regulations.

Overall, the cultural resource impacts associated with the Mitigated Ivanpah 3 and Modified I-15 Alternatives would be lower than those associated with the proposed project due to the reduced acreage that would be disturbed during construction. For the Modified I-15 Alternative, an area comprising 1,836 acres, which is the reconfigured location of Ivanpah Unit 3, has not had a cultural resources inventory conducted, and could potentially contain resources that would be impacted, and which would not be addressed by the proposed mitigation measures.

Hazardous Materials Management

Hazardous material use, storage, and transportation associated with the proposed project would not pose any direct, indirect, or cumulative adverse impact. The proposed project would be designed, constructed, and operated in compliance with applicable laws and regulations, which would protect the public from risk of exposure to an accidental release of hazardous materials. Mitigation measures would be implemented, as follows. **HAZ-1** ensures that no hazardous material would be used at the facility except as listed in the AFC, unless there is prior approval by the BLM's Authorized Officer. **HAZ-2** ensures that local emergency response services are notified of the amounts and locations of hazardous materials at the facility, **HAZ-3** requires the development of a Safety Management Plan that addresses the delivery of all liquid hazardous materials during the construction, commissioning, and operation of the project would further reduce the risk of any accidental release not specifically addressed by the proposed spill prevention mitigation measures, and further prevent the mixing of incompatible materials that could result in the generation of toxic vapors. Site security during both the construction and operation phases is addressed in **HAZ-4** and **HAZ-5. HAZ-6** ensures that the applicant complies with all Federal laws and regulations, regarding use, management, spills, and reporting of hazardous materials on Federal lands.

Because there is no potential for hazardous materials release to extend beyond the facility boundary, there is also no adverse impact to the environment. For any other potential impacts upon the environment, including vegetation, wildlife, air, soils, and water resulting from hazardous materials usage and disposal at the proposed facility, the reader is referred to Sections 4.1, 4.3, 4.10 and 4.14 of this EIS.

Overall, by following regulatory requirements and mitigation measures, there would be no potential impacts for the proposed project, the Mitigated Ivanpah 3 Alternative, or the Modified I-15 Alternative. Any hazards associated with hazardous materials use would be lower for the Mitigated Ivanpah 3 and Modified I-15 Alternatives than for the proposed project, due to the reduced duration of construction and reduced acreage of operations.

DOE has considered the potential environmental consequences of intentional destructive acts at the Ivanpah facility and concludes that it presents an unlikely target for an act of terrorism or sabotage and has an extremely low probability of attack. DOE notes that the environmental impact of any intentional destructive act that could occur is addressed in the impact analysis of containment incidents for hazardous materials, fire, and transportation accidents contained in Chapter 4.

Land Use

The criteria for evaluating Land Use impacts include an assessment of whether a proposed project will conflict with any applicable land use plan. The key land use plan affecting this project is the BLM's CDCA Plan of 1980, as amended (BLM 1980). In the CDCA Plan, the location of the proposed ISEGS facility includes land that is classified as Multiple-Use Class L (Limited Use). The Plan states that solar power facilities may be allowed within Limited Use areas after NEPA requirements are met. This Environmental Impact Statement acts as the mechanism for complying with those NEPA requirements.

Because solar power facilities are an allowable use of the land as it is classified in the CDCA Plan, the proposed action does not conflict with the Plan. However, the Plan also requires that newly proposed power sites that are not already included within the Plan be added to the Plan through the Plan Amendment process. The ISEGS site is not currently included within the Plan, and therefore a Plan Amendment is required to include the site as a recognized element with the Plan. The proposed Plan Amendment, and the corresponding analysis of the proposed Plan Amendment with respect to the analysis requirements contained within Chapter 7 of the Plan, is provided within Section 2 of this EIS. The amendment decision would occur after publication of the FEIS.

Large portions of the land area for Ivanpah 1, 2, and 3 and the administrative complex/logistics area are located within existing Utility Corridors D and BB. The land area for Ivanpah 3 would cover approximately 60% of the 2-mile width of Corridor D. Although the land area for Ivanpah 1 and 2, and the logistics construction area overlap and would limit much of the available area within Corridor BB, future linear facilities could still be routed through the portions of Corridor BB that are within the temporary construction logistics area that will only be used during the construction phase of the project.

The use of land associated with the ISEGS project would combine with impacts of present and reasonably foreseeable projects to result in a cumulative reduction in available land uses within the Ivanpah Valley area, and in the region.

Overall, the land use impacts associated with the Mitigated Ivanpah 3 and Modified I-15 Alternatives would be lower than those associated with the proposed project due to the reduced acreage that would be removed from other potential land uses.

Noise and Vibration

The proposed project, if built and operated in conformance with the proposed mitigation measures, would comply with all applicable noise and vibration laws and regulations for both operation and construction, and would produce no adverse noise impacts on people within the affected area, directly, indirectly, or cumulatively.

Overall, by following regulatory requirements and proposed mitigation measures, there would be no potential impacts for the proposed project, the Mitigated Ivanpah 3 Alternative, or the Modified I-15 Alternative. Any hazards associated with noise and

vibration would be lower for the Mitigated Ivanpah 3 and Modified I-15 Alternatives than for the proposed project, due to the reduced duration of construction and reduced acreage of operations.

Public Health and Safety

The analysis of potential public health risks associated with construction and operation of the ISEGS has not resulted in the identification of any adverse cancer, short-term, or long-term health effects to any members of the public, including low income and minority populations, from project toxic emissions. The analysis of potential health impacts from the proposed ISEGS uses a highly conservative methodology that accounts for impacts to the most sensitive individuals in a given population, including newborns and infants. According to the results of the health risk assessment, emissions from the ISEGS would not contribute directly or cumulatively to morbidity or mortality in any age or ethnic group residing in the project area.

Overall, by following regulatory requirements and proposed mitigation measures, there would be no potential impacts for the proposed project, the Mitigated Ivanpah 3 Alternative, or the Modified I-15 Alternative. Any potential public health threats would be lower for the Mitigated Ivanpah 3 and Modified I-15 Alternatives than for the proposed project, due to the reduced duration and acreage of construction, reduced overall level of emissions, and reduced duration of decommissioning.

Socioeconomics and Environmental Justice

No adverse socioeconomic impacts would occur as result of the construction or operation of the proposed ISEGS. The proposed ISEGS would not cause an adverse direct, indirect, or cumulative impact on population, employment, housing, public finance, local economies, or public services. The proposed ISEGS would benefit the two-county study area (San Bernardino County, California, and Clark County, Nevada) and the local project vicinity in terms of an increase in local expenditures, payrolls, and taxation during construction and operation of the facility. These activities would have a positive effect on the local and regional economy.

The impacts to socioeconomics for the Mitigated Ivanpah 3 and Modified I-15 Alternatives would be beneficial, due to the increase in local employment and tax revenues. However, the increase in employment would not result in an increase in the local population, so would not affect housing or public services. The beneficial impacts associated with the Mitigated Ivanpah 3 and Modified I-15 Alternatives would be slightly lower than those for the proposed project, due to the reduced duration of construction and decommissioning.

Soil and Water Resources

Construction, operation, and decommissioning of the proposed project could potentially impact soil and water resources. Where these potential impacts have been identified, mitigation measures are required to reduce the potential for their occurrence and their

magnitude. With these mitigation measures implemented, the project would conform with all applicable laws and regulations. Potential impacts to soil and water resources are summarized as follows:

1. The proposed project would be located on an alluvial fan where flash flooding and mass erosion could impact the project. Project-related changes to the alluvial fan hydrology could result in impacts to adjacent land users and the Ivanpah playa. The applicant completed a hydrologic study and modeling of the alluvial fan. Based on this work and subsequent confirmatory and sensitivity modeling conducted by the BLM, scour analyses have been performed to support development of a project design that can withstand flash flood flows with minimal damage to site structures and heliostats. In addition, a Drainage Erosion and Sediment Control Plan (DESCP) has been developed to mitigate the potential storm water and sediment project-related impacts. However, the calculations and assumptions used to evaluate potential storm water and sedimentation impacts are imprecise and have limitations and uncertainties associated with them. Given the uncertainty associated with the calculations, the magnitude of potential impacts that could occur cannot be determined precisely. As discussed in the Biological Resources and Recreation sections, the potential effects associated with storm water and sedimentation impacts could adversely affect habitat for a threatened species (the desert tortoise), as well as recreational use of Ivanpah Playa. Should these impacts occur, they would likely be highly controversial. Based on these factors, the proposed project could result in direct, adverse impacts. Therefore, mitigation measure **Soil&Water-5** that defines monitoring, inspection, and damage response requirements, as well as standards and procedures for re-considering the proposed storm water management approach if needed in the future.
2. The proposed project would use an air-cooled condenser for heat rejection and would recycle process wastewater from all plant equipment, including boilers and water treatment equipment, to the extent practicable. Recycling the wastewater would maximize reuse of process water and conserve freshwater. Use of this technology would substantially reduce water use and is consistent with water policy and the constitutional requirement that State water resources be put to beneficial use to the fullest extent possible.
3. There would be no adverse impacts to groundwater supply and quality. In the Ivanpah Valley Groundwater Basin, two substantial components of the basin's water balance are groundwater recharge through precipitation and groundwater loss through well pumping. Both precipitation and pumping in the basin will vary over the 50-year life of the proposed project. To ensure that the project's proposed use of groundwater does not adversely impact the beneficial uses and users of the groundwater in the basin, the project would become part of the existing groundwater monitoring and reporting program developed by San Bernardino County for the Primm Valley Golf Club. Substantial changes to groundwater levels caused by the proposed project would be documented by this monitoring and reporting program in accordance with mitigation measure **Soil&Water-6**.

Overall, the potential for soil and water impacts associated with the Mitigated Ivanpah 3 Alternative would be either the same as, or reduced from those associated with the

proposed project. Some of these potential impacts, including soil erosion associated with site grading and potential stormwater damage to the facility would be reduced substantially, because of the nature of stormwater drainage on the 433-acre northern portion of Ivanpah Unit 3 that would be eliminated. The Mitigated Ivanpah 3 Alternative would also use a reduced amount of groundwater for washing of heliostats, and would therefore reduce potential groundwater use conflicts.

The potential impacts of the Modified I-15 Alternative on soil erosion due to grading, Waters of the State, and stormwater damage to facility infrastructure cannot be fully evaluated at this time, because complete drainage channel mapping and stormwater modeling of the revised Ivanpah Unit 3 location has not been performed. However, based on a preliminary evaluation of the existing drainage mapping, stormwater modeling, and topographic maps of the area, it is likely that the soil and water impacts associated with the Modified I-15 Alternative would be either similar to or lower than those of the proposed project. The Modified I-15 Alternative would also use a reduced amount of groundwater for washing of heliostats, and would therefore reduce potential groundwater use conflicts.

Traffic and Transportation

The proposed project's potential construction and operational impacts related to the regional and local traffic and transportation system are summarized as follows:

1. During construction, project-related construction traffic would not result in an unacceptable level of service along study area roadway segments or intersections, and therefore no adverse impacts would be created by workforce traffic and truck traffic. The project would exacerbate existing congestion on I-15 on Friday afternoons in the area of Yates Well Road, resulting in an adverse impact at that time. To reduce the proposed project's construction- and operation-related contribution to congestion on northbound I-15 on Friday afternoons, mitigation measure **TRANS-1** would require a Traffic Control Plan.
2. During construction, the project would substantially increase the volume of traffic on roadways and intersections in the vicinity of recreation resources. Therefore, mitigation measure **TRANS-1** requires adequate signage along local roads and intersections to alert travelers to the presence of construction vehicles.
3. Because proposed project construction traffic has the potential to result in unexpected damage to Yates Well Road and I-15 freeway ramps, mitigation measure **TRANS-2** is required to ensure that any damage to local roadways would be repaired to pre-project levels to not present a safety hazard to motorists.
4. Saturday through Thursday during operation, workforce and truck traffic to and from the facility would not result in a substantial increase in congestion, deterioration of the existing level of service, or creation of a traffic hazard during any time in the daily traffic cycle and would therefore not have a direct, adverse impact on routes or roadway intersections that would be used to access the ISEGS site.
5. Solar radiation and light reflected from proposed project heliostats could cause a human health and safety hazard to observers in vehicles on adjacent roadways or

air traffic flying above the site, and could cause a distraction of drivers on I-15 that would lead to road hazards and to pilots of aircraft flying over the site. Mitigation measure **TRANS-3** would ensure that solar radiation and light from the heliostats does not impair the vision of motorists or pilots traveling near the site and that the potential for exposure of observers does not cause a human health and safety hazard.

6. Solar radiation and light reflected from proposed project power tower receivers is not expected to pose a human health and safety hazard to navigation of vehicles on adjacent roadways or air traffic flying above the site, but could potentially cause a distraction of drivers on I-15 that would lead to road hazards. Mitigation measure **TRANS-4** would ensure that glare from power tower receivers does not impair the view of motorists or pilots traveling near the site and that the potential for exposure of observers to light reflected from heliostats is minimized to the extent possible.
7. Because the proposed project would result in construction of structures greater than 200 feet tall in the vicinity of a proposed airport and existing military training flight route, mitigation measure **TRANS-5** is required to ensure that onsite power towers are lighted in accordance with FAA recommendations. The project would not adversely affect aircraft operations associated with any aircraft flight traffic.
8. The construction and operation of the ISEGS as proposed, with the effective implementation of mitigation measures, would ensure that the project's direct adverse traffic and transportation impacts would be avoided or reduced in magnitude.
9. Vehicle trips generated by construction and operation of the ISEGS would combine with vehicle trips generated by past, present and reasonably foreseeable projects to contribute to the existing adverse, cumulative impact of congestion on northbound I-15 on Friday afternoons.
10. With the implementation of the traffic control plan required by mitigation measure **TRANS-1**, construction and operation of the ISEGS would not cause a direct adverse impact on northbound I-15 on Friday afternoons, but would contribute to an existing cumulative adverse impact on northbound I-15 on Friday afternoons.
11. During project operation, heat exhaust from the Ivanpah 3 air cooled condenser would result in thermal plumes that would result in the potential for aircraft to experience turbulence at an altitude of 1,350 feet or less. Therefore, mitigation measure **TRANS-6** is required to ensure that thermal plumes associated with ISEGS operation do not impact aviation activities within the navigable airspace above the site.

Because the employment levels, and therefore commuting trips by workers, would be the same for the proposed project, Mitigated Ivanpah 3 Alternative, and Modified I-15 Alternative, the direct adverse impact, and contribution to cumulative adverse impacts, on Interstate 15 on Friday afternoons would be the same for each alternative. The primary difference in traffic impacts would be that the impacts associated with construction and decommissioning of the Mitigated Ivanpah 3 and Modified I-15 Alternatives would occur for a shorter duration than for the proposed project.

Transmission Line Safety and Nuisance

The proposed transmission lines are not expected to pose an aviation hazard according to current FAA criteria, and therefore it is not necessary to recommend location changes on the basis of a potential hazard to area aviation.

The potential for nuisance shocks would be minimized through grounding and other field-reducing measures that would be implemented in keeping with current SCE guidelines (reflecting standard industry practices). These field-reducing measures would maintain the generated fields within levels not associated with radio-frequency interference or audible noise.

The potential for hazardous shocks would be minimized through compliance with the height and clearance requirements of CPUC's General Order 95. Compliance with Title 14, California Code of Regulations, section 1250, would minimize fire hazards while the use of low-corona line design, together with appropriate corona-minimizing construction practices, would minimize the potential for corona noise and its related interference with radio-frequency communication in the area around the route.

Since electric or magnetic field health effects have neither been established nor ruled out for the proposed ISEGS and similar transmission lines, the public health impacts of any related field exposures cannot be characterized with certainty. The only conclusion to be reached with certainty is that the proposed lines' design and operational plan would be adequate to ensure that the generated electric and magnetic fields are managed to an extent the CPUC considers appropriate in light of the available health effects information. The long-term, mostly residential magnetic exposure of health concern in recent years would not be an issue for the proposed line given the absence of residences along the proposed route. On-site worker or public exposure would be short term and at levels expected for Southern California Edison (SCE) lines of similar design and current-carrying capacity. Such exposure is well understood and has not been established as posing a substantial human health hazard.

Since the proposed project line would be operated to minimize the health, safety, and nuisance impacts of concern, and would remain in its present route without nearby residences, the proposed design, maintenance, and construction plan would comply with the applicable laws. With implementation of the mitigation measures proposed above, direct or indirect adverse impacts would not occur.

Because the transmission lines would be the same under the proposed project, the Mitigated Ivanpah 3 Alternative, and the Modified I-15 Alternative, the potential impacts would be the same for all three alternatives. However, in each case, the potential for adverse impacts would be minimized by compliance with regulations and industry standards for operation of transmission lines.

Visual Resources

The proposed project would result in a direct adverse impact to existing scenic resource values as seen from several Key Observation Points in the Ivanpah Valley and Clark Mountains, including:

- The Primm Valley Golf Course;
- Middle-ground-distance viewpoints on Highway I-15;
- Viewpoints in the Mojave National Preserve, throughout the east face of Clark; and Mountain
- Viewpoints in the Stateline Wilderness Area, including the Umberci Mine and vicinity.

The visual impacts associated with the project would be viewed by visitors to the Mojave National Preserve and two designated wilderness areas, and a land-sailing site of regional or greater importance. The potential effects involve the unique scenic characteristics of the local landscape as indicated by the national park and wilderness designations of portions of the project viewshed; concerns expressed by public commentors to date; and a degree of uncertainty as to the level of discomfort or disability glare from the solar tower receivers.

Some of the adverse visual impacts, such as those associated with the Primm Valley Golf Course (KOPs 1 and 2), could be reduced through implementation of mitigation measures. However, potentially adverse visual impacts at the other locations cited above could not be reduced through mitigation, and would thus result in unavoidable adverse impacts.

Because the project has the potential to result in exposure of aircraft pilots, motorists, and hikers to solar radiation reflected from project heliostats and/or power tower receivers, mitigation measures **TRANS-3** and **TRANS-4** would ensure that potential glare from the project is minimized to the extent possible and does not pose a health and safety risk. The solar receiver units atop the solar power towers would generate conspicuously bright levels of glare for foreground viewers. Even with mitigation measures, glare, while not representing a hazard, could represent a visually dominant feature as seen from the viewpoints named above. Remaining glare could alter the character of views of Clark Mountain from the valley floor, affecting the public's ability to enjoy those views, though not preventing them.

The project, in combination with foreseeable future projects, could also result in adverse and unavoidable cumulative visual impacts of two kinds:

1. Cumulative impacts within the immediate project viewshed, essentially comprising foreseeable future projects in the Ivanpah Valley; and
2. Cumulative impacts of foreseeable future solar and other renewable energy projects within the southern California Mojave Desert.

The analysis establishes that the proposed project would represent a substantial change and impairment of a natural landscape that is largely intact. However, within an urban frame of reference, not all viewers would find the project disagreeable or unattractive; indeed, many viewers could find the project interesting to view due to its novelty. Overall, it would exhibit a moderate level of visual quality and would leave scenic views of Clark Mountain unobstructed physically, though strongly impaired by glare. Within an urban frame of reference, where preservation of natural landscapes is not a primary goal, this level of impact might be considered acceptable.

This fact may be relevant within the context of the cumulative impact scenario foreseen within the Ivanpah Valley, since development of any of the proposed renewable energy projects, or a preponderance of other foreseeable projects, would result in such an urbanized setting. If a number of the foreseeable cumulative projects are developed, the Ivanpah Valley landscape would, with or without the ISEGS project, quickly reach a point at which the level of scenic intactness is impaired to a *de facto* VR Class IV, low visual quality and sensitivity condition, becoming an urbanized environment, in apparent conflict with the area's Multiple-Use Class L status under the CDCA Plan and the County of San Bernardino's scenic highway policies.

As stated previously, the project would result in unavoidable adverse impacts. However, mitigation measures would minimize impacts to the greatest feasible extent.

Overall, the Mitigated Ivanpah 3 Alternative would have the same adverse impacts that would be associated with the proposed project. However, the magnitude of these impacts would be reduced due to the reduction in the number of power tower receivers, the reduction of the size of the heliostats fields, and the movement of the northern boundary of the facility further from sensitive viewing locations.

The Modified I-15 Alternative would also have the same type of adverse impacts that would be associated with the proposed project. To viewers located in the Mojave National Preserve and Stateline Wilderness to the west and north of the facility, the magnitude of these impacts would be reduced due to the reduction in the number of power tower receivers, the reduction of the size of the heliostats fields, and the reconfiguration of Ivanpah Unit 3. However, the reconfiguration of Ivanpah Unit 3 four miles to the south, to a location directly adjacent to Interstate 15, would increase the magnitude of visual impacts to viewers on Interstate 15.

Waste Management

Project wastes would be managed in compliance with all applicable waste management laws and regulations. Both construction and operation wastes would be characterized and managed as either hazardous or non-hazardous waste. All non-hazardous wastes would be recycled to the extent feasible, and nonrecyclable wastes would be collected by a licensed hauler and disposed of at a permitted solid waste disposal facility. Hazardous wastes would be accumulated onsite in accordance with accumulation time limits and then properly manifested, transported to, and disposed of at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies. Management of the waste generated during construction and operation of the ISEGS would not result in any direct or cumulative adverse impacts, and would comply with applicable laws and regulations, if the waste management practices and mitigation measures are implemented.

Mitigation measures **WASTE-1** through **WASTE-7** would help ensure and facilitate ongoing project compliance with laws and regulations. These measures would require the project owner to do all of the following:

- Prepare Construction Waste Management and Operation Waste Management Plans detailing the types and volumes of wastes to be generated and how

wastes will be managed, recycled, and/or disposed of after generation (**WASTE-3** and **6**).

- Obtain a hazardous waste generator identification number (**WASTE-4**).
- Ensure the project site is investigated and any contamination identified is remediated as necessary, with appropriate professional and regulatory agency oversight (**WASTE-1, 2, and 7**).
- Report any waste management-related laws and regulations enforcement actions and how violations will be corrected (**WASTE-5**).
- Ensure that all spills or releases of hazardous substances are reported and cleaned-up in accordance with all applicable federal, state, and local requirements (**WASTE-7**).

The existing available capacity for the Class III landfills that may be used to manage nonhazardous project wastes exceeds 1 billion cubic yards. The total amount of nonhazardous wastes generated from construction and operation of ISEGS would contribute less than 0.1 percent of the remaining landfill capacity. Therefore, disposal of project generated non-hazardous wastes would not have an adverse impact on Class III landfill capacity.

In addition, the Class I disposal facilities that could be used for hazardous wastes generated by the construction and operation of ISEGS have a remaining capacity in excess of 68 million cubic yards (Campbell 2008). The total amount of hazardous wastes generated by the ISEGS would contribute less than 0.02 percent of the remaining permitted capacity. Therefore, impacts from disposal of ISEGS generated hazardous wastes would not have an adverse impact on the remaining capacity at Class I landfills.

Overall, by following regulatory requirements and mitigation measures, there would be no potential adverse impacts for the proposed project, the Mitigated Ivanpah 3 Alternative, or the Modified I-15 Alternative. Any hazards associated with waste generation and management would be lower for the Mitigated Ivanpah 3 and Modified I-15 Alternatives than for the proposed project, due to the reduced duration of construction, and reduced volume of materials requiring demolition.

Worker Safety and Fire Protection

By implementing the described construction safety and health and project operations and maintenance safety and health programs, as required by mitigation measures **WORKER SAFETY -1**, and **-2**; and fulfilling the requirements of mitigation measures **WORKER SAFETY-3** through**-6**, the proposed project would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable laws and regulations. Information initially received from the San Bernardino County Fire Department (SBCFD) indicated that the proposed project would not have adverse impacts on local fire protection and emergency response services. However, the County has provided additional information, in the form of comments on the DEIS, indicating that such an adverse impact may exist. In an attempt to rectify the

contradictory information provided by the SBCFD, BLM submitted a letter to the County requesting additional information on the specific impacts, and the County's financial estimate. As of the time of publication of this FEIS, the requested information has not been received. Although such impacts to County services may occur, neither BLM nor the County has a legal mechanism in place to require the applicant to provide funding to the County to address this impact.

Overall, by following regulatory requirements and proposed mitigation measures, there would be no potential impacts for the proposed project, the Mitigated Ivanpah 3 Alternative, or the Modified I-15 Alternative. Any hazards associated with worker safety would be lower for the Mitigated Ivanpah 3 and Modified I-15 Alternatives than for the proposed project, due to the reduced duration of construction, and reduced volume of materials requiring demolition. The risk of wildfire damage to the facility would be the same for the Mitigated Ivanpah 3 Alternative and the proposed project.

Geology, Paleontology, and Minerals

The proposed ISEGS site is located in a moderately active geologic area on the west side of Ivanpah Valley, east of the Clark Mountain Range in the eastern Mojave Desert of Southern California. The main geologic hazards at this site include ground shaking; liquefaction; settlement due to compressible soils, subsidence associated with shrinkage of clay soils, hydrocompaction, or dynamic compaction; and the presence of expansive clay soils. The applicant would comply with state requirements regarding facility design by incorporating recommendations contained in a design-level geotechnical report as required by the California Building Code (2007). In addition, the applicant would comply with Energy Commission Conditions of Certification **GEN-1, GEN-5,** and **CIVIL-1** (provided in **Appendix C - Facility Design**), which were recommended by Energy Commission staff in their FSA to eliminate or reduce the magnitude of these potential impacts. The design and construction of the project should have no adverse impact with respect to geologic, mineralogical, and paleontological resources.

The proposed project area is currently not used for mineral production, nor is it under claim, lease, or permit for the production of locatable, leasable, or salable minerals. Sand and gravel resources are present at the site and could potentially be a source of salable resources; however, such materials are present throughout the regional area such that the ISEGS should not have an adverse impact on the availability of such resources.

Paleontological resources have been documented within 45 miles of the project, but no fossils were found during field explorations on the solar plant sites or near the sub-station and ancillary facilities; however, pack rat middens with plant remains were found in the carbonate bedrock outcrop west of Ivanpah 3. If encountered, potential impacts to paleontological resources contained in these materials due to construction activities would be mitigated through worker training and monitoring by qualified paleontologists, as outlined in mitigation measures **PAL-1** through **PAL-7**.

Overall, the paleontological resource impacts associated with the Mitigated Ivanpah 3 Alternative would be lower than those associated with the proposed project due to the reduced acreage that would be disturbed during construction. Although the acreage would be reduced by approximately 12.5 percent, the potentially impacted area would be reduced by more than 12.5 percent, because the 433-acre area eliminated from the alternative would require extensive grading in the proposed project. Impacts on leasable and locatable mineral resources would be the same or lower for the Mitigated Ivanpah 3 Alternative than the proposed project. No hazards to either the proposed project or Mitigated Ivanpah 3 Alternative from geologic conditions would be expected.

The paleontological resource impacts associated with the Modified I-15 Alternative would also be lower than those associated with the proposed project due to the reduced acreage that would be disturbed during construction. Although the resources within the revised Ivanpah Unit 3 location have not been inventoried, they are likely to be similar to those identified and evaluated for the proposed project. Impacts on leasable and locatable mineral resources would be the same or lower for the Modified I-15 Alternative than the proposed project. No hazards to either the proposed project or Modified I-15 Alternative from geologic conditions would be expected.

Livestock Grazing

The issue of cattle grazing and grazing administration is directly applicable to the proposed project because the public lands associated with the proposed project are within an active grazing allotment. Because the proposed project would involve removal of vegetation and fencing off of the entire property, approval of the proposed project would require modifying the allotment boundaries, resulting in a minor reduction in allotment size of 4 percent. Administratively, this modification can be accomplished through BLM administrative procedures. In addition, increased traffic associated with construction and operation of the proposed project are not expected to cause injury of death to individual cattle through vehicle strikes because the livestock may well avoid the area in its entirety because of the human activities that would occur on the site. The impact would result in modification of the allotment boundaries, resulting in a minor 4 percent reduction in allotment acreage which is not considered a substantial adverse impact to foraging opportunities or to the safety of livestock.

The No Action Alternative would not have any impact on the characteristics or administration of the allotment.

The impact of the Mitigated Ivanpah 3 and Modified I-15 Alternatives on the existing Clark Mountain Grazing Lease would be direct and adverse, but would be lower than that associated with the proposed project. Any hazards associated with vehicle and equipment use in active cattle grazing areas when cattle are present would be the same for both alternatives, and would be mitigated through the use of speed limits and worker notifications.

Wild Horses and Burros

The issue of burros is directly applicable to the proposed project because the public lands associated with the proposed project coincides with a designated HMA, and because burros are known to exist in the vicinity of the proposed project location. Because the proposed project would involve removal of vegetation and fencing of the entire 3,712 acre property that would be permanently disturbed, approval of the proposed project would eliminate a small portion of the land area available for the existing burros. In addition, increased traffic associated with construction and operation of the proposed project could potentially cause injury or death to individual burros through vehicle strikes. Individual burros could also be injured or killed if they were to fall into excavations associated with project construction activities, or be fed and watered by humans in the immediate vicinity of the project footprint.

The Northern and Eastern Mojave (NEMO) Plan Amendments have established the AML in the vicinity of the proposed project area at zero, meaning BLM is actively involved in removing all burros within the area. In addition, the mitigation measures would avoid injury to burros while they may still be present in the project area or vicinity.

The No Action Alternative would not have any impact on the characteristics or administration of the burros.

Neither the proposed project, the Mitigated Ivanpah 3 Alternative, nor the Modified I-15 Alternative would have an adverse impact on wild horses or burros in the project area. Any hazards to individual burros associated with vehicle and equipment use would be the same for all three alternatives, and would be mitigated through the use of speed limits and worker notifications.

Recreation

The proposed project location itself is not specifically permitted, used, or designated for any recreational activity. The proposed location represents a small portion of the overall area available for recreation in the Mojave Desert, and although the proposed project would require re-direction of access roads to recreation areas, the magnitude of this re-direction is expected to be small. However, the issue of recreational resources is still directly applicable to the proposed project because part of the attraction of the area, historically, has been driven by easy vehicular access to an unspoiled desert viewscape. The presence of the proposed facility would likely attract some tourists who are interested in unusual and large-scale industrial operations. While the impact on the quality of outdoor recreational experience would diminish the experience of campers, hikers, hunters, and some other recreational users, it would not likely affect the larger number of local tourists which include golfers, land sailors, and visitors to the Primm casinos.

The impacts related to changes in the viewscape, contributing to the transformation of a mostly natural to a more industrial setting, would be long-term, even though the land could be potentially restored and the associated viewscape as affected by the project could be repaired following facility decommissioning.

The project could potentially impact land sailing on the Ivanpah Dry Lake surface if it were to modify stormwater and sedimentation characteristics or result in hazardous materials, waste or debris being transported to the Dry Lake. Mitigation measures in Sections 4.5, 4.10, and 4.14 would mitigate these impacts by reducing the potential for their occurrence, and by requiring monitoring and response to any identified impacts. Also, the project would not notably modify wind characteristics, or impose a visual glare hazard that would affect the health and safety of land sailors.

The No Action Alternative would not have any impact on the characteristics or administration of recreational resources.

Overall, no direct or indirect impacts on recreational use of the project area, Dry Lake bed, and surrounding areas would be expected from the proposed project, the Mitigated Ivanpah 3 Alternative, or the Modified I-15 Alternative. All three alternatives would likely provide a beneficial impact on tourism by attracting persons interested in the unusual and large-scale character of the facility. However, all three alternatives would also contribute incrementally to an increase in the industrial character of the area, which would likely result in reducing the quality of the recreational experience for many recreational users of the area.

1.8 Summary

Although the proposed project would achieve all project objectives, and generate the maximum amount of beneficial socioeconomic, greenhouse gas, and air pollutant impacts, it would also result in the greatest number and magnitude of adverse impacts. These would include impacts to Biological Resources, Soil and Water Resources, and Visual Resources that could not be completely mitigated.

Selection of the Mitigated Ivanpah 3 Alternative would accomplish all of the objectives of the purpose and need, including meeting power demand, as well as federal and state objectives for renewable energy development. It would also achieve almost all of the beneficial impacts of the proposed project, including socioeconomic benefits of increases in employment and fiscal resources, and displacement of greenhouse gas and air pollutant emissions associated with fossil-fueled power plants. While meeting these objectives and providing these beneficial impacts, the adverse impacts of the Mitigated Ivanpah 3 Alternative would be much lower than the proposed project, especially in the areas of Biological Resources, Soil and Water Resources, and Visual Resources.

Selection of the Modified I-15 Alternative would also accomplish all of the objectives of the purpose and need, including meeting power demand, as well as federal and state objectives for renewable energy development. It would also achieve almost all of the beneficial impacts of the proposed projects, including socioeconomic benefits of increases in employment and fiscal resources, and displacement of greenhouse gas and air pollutant emissions associated with fossil-fueled power plants. While meeting these objectives and providing these beneficial impacts, the adverse impacts of the Modified I-15 Alternative would be lower than the proposed project in some areas, but would be increased in other areas. With respect to Biological Resources, the Modified I-15 Alternative would have a reduced impact on high quality desert tortoise habitat, as

a result of moving Ivanpah Unit 3 to a location which partially overlaps the lower quality habitat adjacent to Interstate 15. However, impacts to Visual Resources and potential glare impacts for viewers on Interstate 15 would increase, due to the placement of heliostat fields within 1,000 feet of the highway for a distance of 1.8 miles. The Modified I-15 Alternative could also result in an increase in impacts to recreational access as compared to the proposed project, due to the greater length of existing off-highway vehicle (OHV) trails that would be included within the project footprint.

Most of the impacts associated with the Mitigated Ivanpah 3 and Modified I-15 Alternatives would be very similar to each other, based on the similar size, technology, and configuration of the facility. The only physical difference between the two alternatives would be the location of Ivanpah Unit 3, which would border the northern portion of the facility in the Mitigated Ivanpah 3 Alternative, and the southern portion of the facility in the Modified I-15 Alternative. This difference in location results in potentially different impacts to several resources, as follows:

- Biological Resources

  The difference in location has the potential to impact different habitat, wildlife, and plants in the two different locations. The northern location of Ivanpah Unit 3 in the Mitigated Ivanpah 3 Alternative is likely to have a higher density of tortoises and rare plants, and therefore a higher potential for impacts, than the southern location of Ivanpah Unit 3 in the Modified I-15 Alternative.

- Land Use

  Both the Mitigated Ivanpah 3 and Modified I-15 Alternatives would partially occupy designated utility corridors; however, the corridors involved are different from each other. Under the Mitigated Ivanpah 3 Alternative, Ivanpah Unit 3 would occupy a portion of utility corridor D, while Ivanpah unit 3 in the Modified I-15 Alternative would partially occupy corridor B. In both cases, portions of the corridors would remain available for other uses.

- Soil and Water

  Based on a review of topographic information and stormwater modeling that covers a portion of the Modified I-15 site, it is likely that the position of the Modified I-15 site is similar to, or possibly slightly more favorable than, the Mitigated Ivanpah 3 site with respect to potential stormwater damage.

- Traffic and Transportation

  The potential issue of distraction to drivers on Interstate 15 due to glare from the heliostats and power tower receivers cannot be quantified, and is difficult to predict. If this issue should occur, it would likely be more disruptive at the Modified I-15 location than the Mitigated Ivanpah 3 location, due to the closer proximity of the heliostats and power towers to Interstate 15.

- Visual Resources

  With respect to the position of viewers located on Clark Mountain or the Stateline Wilderness to the north and west of the facility, visual impacts associated with

the Modified I-15 Alternative would be lower than those for the Mitigated Ivanpah 3 Alternative. This would be due to the more distal location of Ivanpah Unit 3 in the Modified I-15 Alternative. For the same reason, visual impacts to viewers on Interstate 15 would be higher for the Modified I-15 Alternative, due to the situation of Ivanpah Unit 3 within 1,000 feet of the highway, for a distance of approximately 1.8 miles.

- Recreation

  Both the Mitigated Ivanpah 3 Alternative and the Modified I-15 Alternative would occupy land that currently includes designated OHV trails used for recreation. In both cases, the trails would be re-routed around the outside of the facilities. The length of trails that would be affected would be 8,100 feet (1.5 miles) for the Mitigated Ivanpah 3 Alternative, and 12,270 feet (2.4 miles) for the Modified I-15 Alternative.

Although it would have no adverse impacts, the No Action Alternative would not accomplish project objectives of meeting the demand for power, or contribute to meeting state and federal objectives for renewable energy development. It also would not provide the beneficial impacts associated with the proposed project and Mitigated Ivanpah 3 Alternative, including the socioeconomic benefits. By not contributing to the development of renewable energy, the No Action Alternative would cause the state to continue to rely on fossil-fueled energy sources, with the associated greenhouse gas and air pollutant emissions.

Public comments received on the Supplemental DEIS included additional information and opinions regarding the relative merits of the four alternatives. A detailed discussion of these comments is provided in Appendix A-2. The following summarizes the major points of the comments with respect to the selection of a preferred alternative:

- Many commentors, including the applicant, public officials, labor unions, and individuals favor the proposed project because it would meet the growing electricity needs of the region, would generate that power without releasing greenhouse gases, and would provide jobs. However, numerous other commentors, including environmental organizations and individuals, either oppose the proposed project, or desire that it be modified, due to the adverse impacts that the project would have on biological resources, visual resources, recreation, air quality, and land uses.
- The applicant and individuals provided comments in support of the Mitigated Ivanpah 3 Alternative. These comments supported this alternative for the reasons cited for the proposed project above, as well as the fact that the alternative would result in a reduction of adverse impacts to biological resources. Several of the environmental organizations and individuals who were opposed to the proposed project also opposed the Mitigated Ivanpah 3 Alternative, primarily because they felt that the reduction in adverse impacts associated with this alternative was not as great as could be achieved through the Modified I-15 Alternative.

- The Modified I-15 Alternative was supported by several environmental organizations, including the Sierra Club, primarily because placement of the facility closer to I-15 would minimize adverse impacts to biological resources. The applicant opposed the Modified I-15 Alternative for several technical and impact-related reasons. In their comments on the Supplemental DEIS, the applicant noted that the Modified I-15 Alternative would not be economically feasible for them to implement, due to the length of time that would be needed to re-design and re-configure the engineering design for the project. The applicant also cited increased visual impacts in their opposition to the Modified I-15 Alternative.
- Numerous commentors, including environmental organizations and individuals, supported the No Action Alternative. This was primarily due to concerns with placing the facility in a currently undeveloped location, the likelihood that the facility would incrementally add to industrialization of Ivanpah Valley, and the lack of suitable mitigation and compensation for desert tortoises. Some commentors, such as the Center for Biodiversity, stated a preference for the No Action Alternative, but stated that if a facility must be built, then they preferred the Modified I-15 Alternative.

Based on the comparative analysis of the ability of each alternative to meet the purpose and need, and the environmental impacts that would be associated with each alternative, the Mitigated Ivanpah 3 Alternative is identified as the preferred alternative.